ZebraNet®
10/100 Print Server

User Guide

47619L-006

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About This Document

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Who Should Use This Document

This User Guide is intended to be used by any person who will install and work with the 10/100 PS.

How This Document Is Organized

This User Guide is set up as follows:

Section	Description
Introduction	This chapter provides a high-level overview of the 10/100 PS device, installation types, standard network configurations, and how to work with 10/100 PS.
Getting Started	This chapter provides you with information and procedures for working with the most frequently used 10/100 PS features.
Installation	This chapter provides information on how to install the 10/100 PS.
Printing Configurations	This chapter provides information and instructions on configuring your printer for use with a BSD or System V Queue.
Using Printing Protocols	In this chapter, you are given steps to set up your 10/100 PS to support Internet Printing Protocol (IPP) and File Transfer Protocol (FTP).
ZebraLink WebView	This appendix describes the ZebraLink WebView functionality on your ZebraLink-enabled printer with a 10/100 PS.
10/100 Print Server	This appendix provides you with details on the 10/100 PS features that were not covered in the chapter Getting Started on page 27.
Hardware Troubleshooting	This section provides you with solutions to known issues.
Frequently Asked Questions	This section provides a group of frequently asked questions (FAQs) about 10/100 PS.
Glossary	This appendix is a list of terms and associated definitions.

Contacts

Technical Support via the Internet is available 24 hours per day, 365 days per year.

Web Site: www.zebra.com
E-mail Back Technical Library:
E-mail address: emb@zebra.com
Subject line: Emaillist
Self Service Knowledge Base: www.zebra.com/knowledgebase
Online Case Registration: www.zebra.com/techrequest

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Technical Support For questions on the operation of Zebra equipment and software, please call your distributor. For additional assistance, contact us. Please have your model and serial numbers available.	T: +1 877 ASK ZEBRA (275 9327) F: +1 847 913 2578 Hardware: ts1@zebra.com Software: ts3@zebra.com *Kiosk printers:* T: +1 866 322 5202 E: kiosksupport@zebra.com	T: +44 (0) 1628 556039 F: +44 (0) 1628 556003 E: Tseurope@zebra.com	T: +65 6858 0722 F: +65 6885 0838 E: *China:* tschina@zebra.com *All other areas:* tsasiapacific@zebra.com
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Key: T: Telephone
F: Facsimile
E: E-mail

Document Conventions

The following conventions are used throughout this document to convey certain information:

Alternate Color (online only) Cross-references contain links to other sections in this guide. If you are viewing this guide online, click the blue text to jump to its location.

Command Line Examples All command line examples appear in `Courier New` font. For example, type the following to get to the Post-Install scripts in the `bin` directory:

```
Ztools
```

Files and Directories All file names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Cautions, Important, Note, and Example

Caution • Warns you of the potential for electrostatic discharge.

Caution • Warns you of a potential electric shock situation.

Caution • Warns you of a situation where excessive heat could cause a burn.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to you.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

Caution • Advises you need to wear protective eye wear.

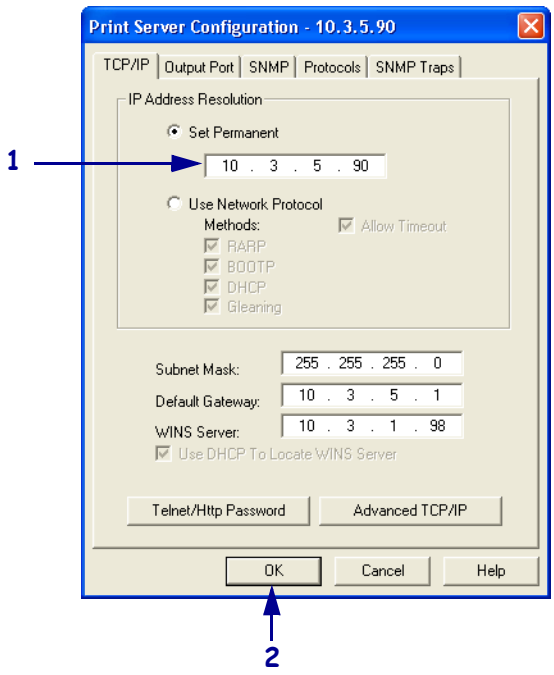
Important • Advises you of information that is essential to complete a task.

Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.

Example • Provides an example, often a scenario, to better clarify a section of text.

Illustration Instructions Used when an illustration contains either information about a dialog box or step(s) to accomplish in a dialog box.

One illustration instruction identifies a section of the dialog box and the other shows steps to follow.



1	Set Permanent text-box.
2	**a.** In the Set Permanent text-box, type in the print server's IP address. **b.** When you are finished, click OK.

Related Documents

The following documents might be helpful references:

- *ZebraNet Wireless Print Server User Guide*
- *ZPL II® Programming Guide For x.10 through x.13 Firmware*
- *ZPL II® Programming Guide For x.14 Firmware and Above*
- *ZebraNet Bridge Enterprise User Guide*

1 Introduction

This chapter provides a high-level overview of the 10/100 PS device, installation types, standard network configurations, and how to work with 10/100 PS.

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Overview

The 10/100 Print Server (PS) is an optional factory- or field-installed device that connects the network and your ZebraLink-enabled printer. The 10/100 PS provides you with a web browser as a user interface for printer and 10/100 PS settings. If you use the ZebraNet Bridge, you can easily access the specialized features of a ZebraLink-enabled printer. For details, see the ZebraNet Bridge Enterprise User Guide.

Important • You can download the most recent version of ZebraNet Bridge Enterprise from www.zebra.com/utilities.

Requirements

This section lists the minimum requirements for 10/100 PS, which include browsers, supported services, address administration protocols, hardware, and firmware.

Browser Support

- HTML v3.2 or higher

Supported Services

- Raw TCP
- HTTP
- LPR/LPD
- SNMPv1
- POP3
- IPP v1.0
- FTP
- UDP
- Telnet
- SMTP
- WINS
- ARP

Address Administration Protocols

- DHCP
- BootP
- RARP
- Gleaning
- Permanent

Hardware

The following table indicates which printers are compatible with the 10/100 Print Server (10/100 PS) options.

Printers	External *	Internal Field Upgrade	Internal Factory
105*SL*™	•	•	•
R110Xi™	•	•	•
R170Xi™	•	•	•
*PAX*4™ series	•	•	•
R110*PAX*4™	•	•	•
S4M™	•	• *	• *
*Xi*III*Plus*™	•	•	•
Xi4™	•	†	†
R110Xi4™	•	†	†
Z4Mplus™	•	•	•
Z6Mplus™	•	•	•
ZM400™	•	†	†
ZM600™	•	†	†
RZ400™	•	†	†
RZ600™	•	†	†

NOTES: * For additional information on print server firmware versions, see *Firmware* on page 16.

† For information on these print servers, see the ZebraNet 10/100 Internal Print Server User Guide (p/n: 14197L-xxx) available at www.zebra.com/manuals.

Firmware

The S4M printers and all external print servers are available with several versions of print server firmware. All other printers will use print server firmware version 1.01.x.

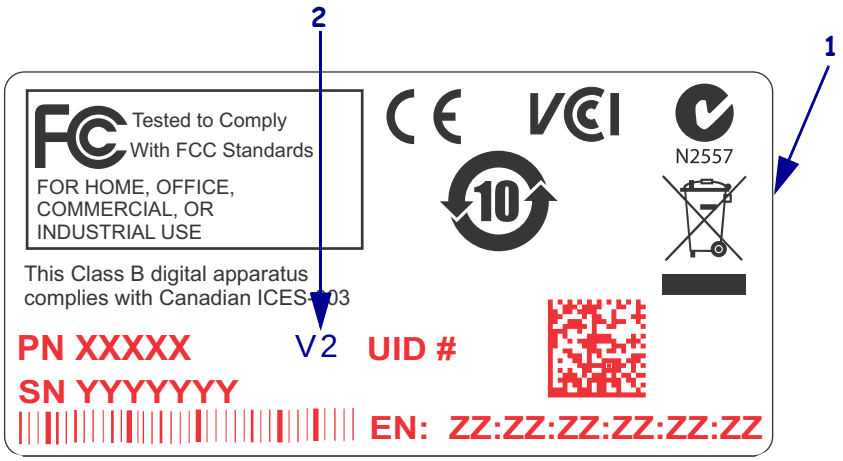
To determine the proper firmware version, first determine your hardware version.

To locate your hardware version, perform the following:

1. Which type of printer and print server do you have?

If you have…	Then…
Any printer with an External print server	a. Look at the side of the print server. b. See Figure 1 on page 17. Your version is listed on the Compliance label. c. Your hardware version number is either blank or V2. •If your hardware version is blank, assume this means V1 (version 1). You will need firmware version 1.01.x. •If your hardware version is V2, you will need firmware version 2.01.x.
An S4M printer with an Internal print server	a. Look at the back plate of the printer. b. See Figure 2 on page 17. Your version is listed on the thin Compliance label on the bracket of the wired print server. c. The version number is shown as blank or V2. •If your hardware version is blank, assume this means V1 (version 1). You will need firmware version 1.01.x. •If your hardware version is V2, you will need firmware version 2.01.x.
All other printers with an Internal print server	a. Your hardware version will be V1. b. You will need firmware version 1.01.x.

Figure 1 • External 10/100 Print Server Sample Compliance Label



1	Sample Compliance label
2	Location of hardware version

Figure 2 • Internal 10/100 Print Server Sample Compliance Label

1	Sample Compliance label (vertically oriented on the back of the printer)
2	Location of hardware version

Compatibility

This section identifies the various components that are compatible with 10/100 PS.

ZebraNet wireless print servers 10/100 PS is fully compatible with the wireless print servers.

Software IBM®: Tivoli® v7.1.3, HP®: Web JetAdmin™ v7.0, OpenView™ v6.4, and any SNMP management application via Zebra Management Information Base (MIB) all work with 10/100 PS.

Installation Types

10/100 PS can be factory- or field-installed, as follows:

Factory Factory installations are for new Zebra printers that are built with the internal 10/100 PS option.

Field Field installations are for Zebra printers already in the field that do not have the 10/100 PS device installed. The 10/100 PS option can be installed on existing printers, as follows:

- **External 10/100 PS** — attaches to the printer parallel port
- **lnternal 10/100 PS** — for the appropriate Zebra printers, this option connects directly to the main logic board

Caution • A qualified service technician must perform this installation.

External 10/100 PS Specifications

General Specifications			
Network Connection		Ethernet 10BASE-T and 100BASE-T UTP RJ-45 connection Half and Full Duplex Communications	
Printer Connection		Bi-directional, IEEE-1284 Centronics parallel port (Compatibility, Nibble, and ECP)	
User Interface		LED activity indicators: • bi-color display of operational status • bi-color display of speed and network activity	
Height (external dimensions)		1.2 in.	30.48 mm
Width (external dimensions)		2.8 in.	71.12 mm
Length (external dimensions)		3.2 in.	81.28 mm
Weight		2.7 oz	77 g
Electrical		Maximum 450mA at 5.25VDC Power provided by the printer (Centronics pin 18, 5VDC at 450mA)	
Temperature	Operating	32° to 104°F	0° to 40°C
	Storage	–40° to 140°F	–40° to 60°C
Relative Humidity	Operating	20% to 85%, non-condensing	
	Storage	5% to 85%, non-condensing	
Agency Approvals		Agency Approvals • IEC 60950 • EN 55022, class B • EN 55024 • AS/NZS3548 Agency Marks • FCC - B • ICES-003 • VCCI • C-Tick	

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Installation

This chapter provides information on how to install the 10/100 PS.

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External 10/100 PS

This section provides you with an illustration of the external 10/100 PS and the steps required for its installation. For a list of compatible printers, see *Hardware* on page 15.

Before You Begin

Important • In order to take advantage of all features described in this manual, you must download firmware X.14 or later.

Note • Not all printers support firmware X.14 or later. On those printers, the features for this print server will be limited.

To upgrade you printer firmware, complete these steps:

1. If your printer has firmware x.12 firmware, you **must** upgrade your printer firmware to version x.14.x or higher.
2. To upgrade your firmware, visit the Zebra Web site:

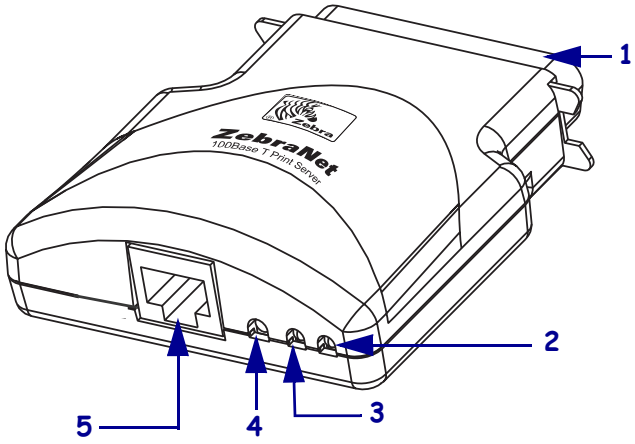
   www.zebra.com/firmware
3. Confirm that the upgrade was successful:

If...	Then...
Your printer has an LCD	Look at the lower right-hand corner and confirm the version of firmware that is on your printer.
Your printer does not have an LCD	Print out a configuration label to see the version of firmware that is on your printer.

Illustration

Figure 3 shows an external 10/100 PS. When necessary, refer back to this illustration during the installation steps.

Figure 3 • External 10/100 PS



1	Parallel connector
2	Network status LED
3	10/100 PS Status LED
4	Test button
5	Ethernet connector

For more details on status indicators, see *10/100 PS Network Status/Activity Indicator on page 99*.

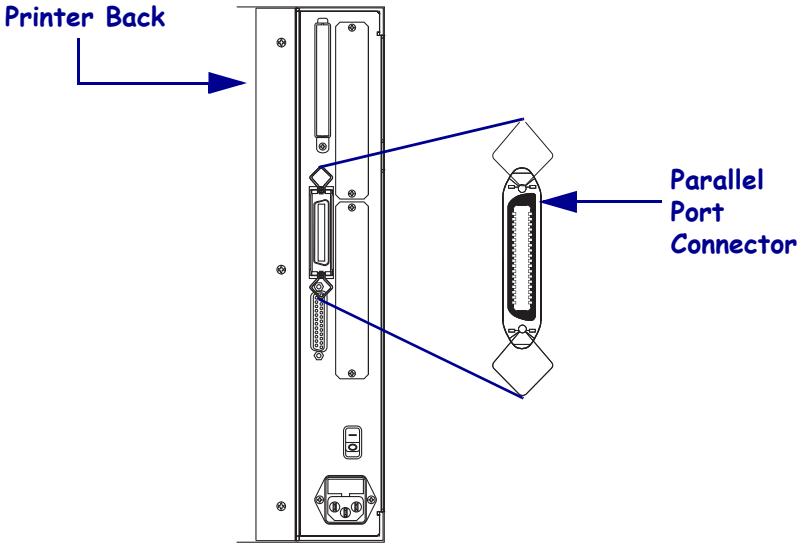
Installation Instructions

To install an external 10/100 PS, complete these steps:

1. Turn off (**O**) the printer.
2. On the back of the printer, connect the 10/100 PS device to the parallel port.

   Figure 4 shows the location and provides an enlarged illustration of the parallel port.

Figure 4 • Rear of 105SL Printer



3. Secure the wire locks.
4. On the back of the 10/100 PS, connect an active Ethernet cable to the RJ-45 connector Ethernet connector.
5. Turn on (**I**) the printer.

   The 10/100 PS performs a Power On Self-Test (POST). This takes about 45 seconds. During the POST, the 10/100 PS Status LED (just below the TEST button) turns red and flashes on and off. Once the POST is successfully completed and the 10/100 PS is fully initialized, the 10/100 PS Status LED turns green.

   For more details on status indicators, see *10/100 PS Status Indicator* on page 98.

Note • If there is not an active Ethernet cable attached to the 10/100 PS, the LED indicator turns red and slowly flashes on and off.

6. To check the status of the 10/100 PS, press the Test button located on the back of the 10/100 PS.

   This prints out a configuration label of the 10/100 PS. To see a sample label, see Figure 5 on page 25.

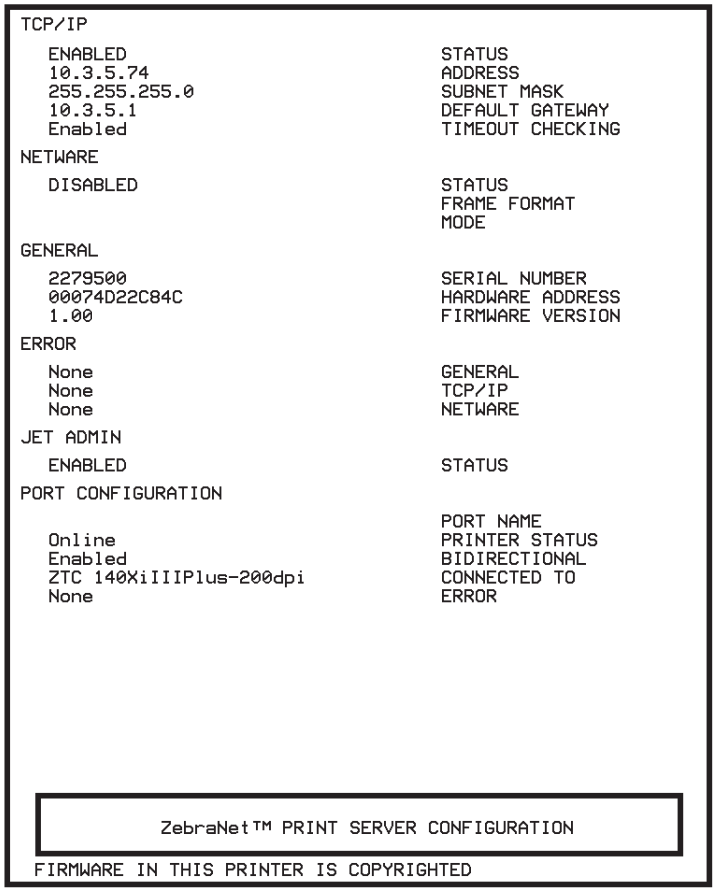
In order to print the 10/100 PS configuration label, the correct media size must be loaded in the printer. For all printers, the minimum label length is 4 in. (101.60 mm). Table 1 shows the minimum label widths needed to print a 10/100PS configuration label with different DPI printheads.

Table 1 • Label Width

DPI	Inches	mm
600	1.25	31.75
300	2.50	63.50
211	3.69	93.73
150	5.0	127.00

This is an example of a 10/100 PS configuration label.

Figure 5 • 10/100 PS Configuration Label



Internal 10/100 PS

To install an internal 10/100 PS, see the installation instructions on the Connectivity Solutions CD.

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Getting Started

This chapter provides you with information and procedures for working with the most frequently used 10/100 PS features.

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Before You Begin

10/100 PS offers many features, but how you access and work with them is dependent on your environment.

Default User ID and Password

Throughout the procedures in this document, there are some features that require the default User ID and/or default password. If you are prompted, these are the defaults:

- **User ID**: `admin`
- **Password**: `1234`

Printing a Configuration Label

Before you begin, you need to get information from the 10/100 PS configuration label.

Important • Make sure the printer is turned off (**O**).

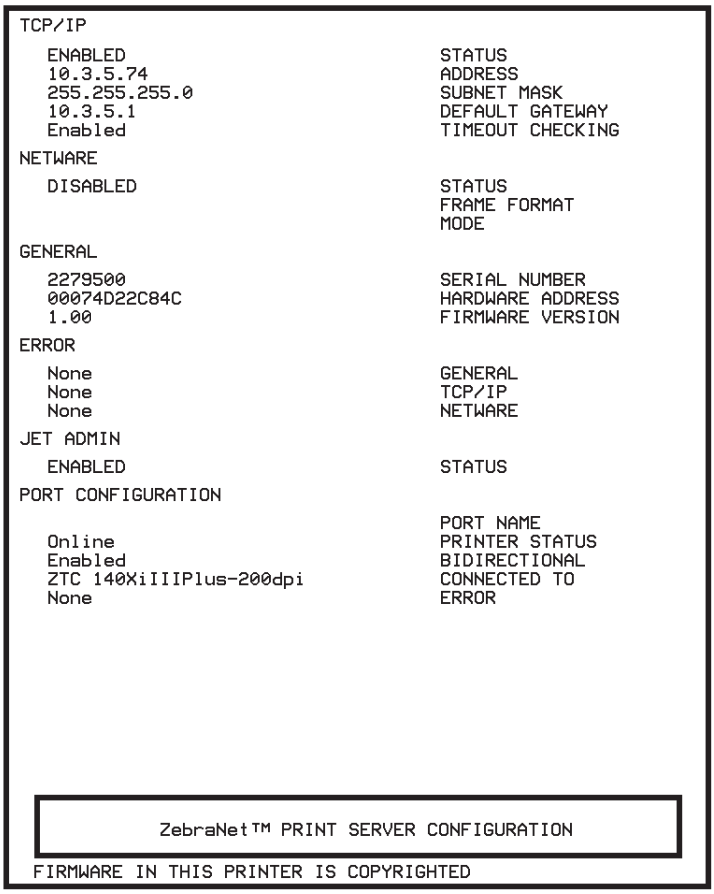
In order to print the 10/100 PS configuration label, the correct media size must be loaded in the printer. For specific information on media sizes, see Table 1 on page 25.

To print a 10/100 PS configuration label, complete these steps:

1. Turn on (**I**) the printer and let it complete its power-up cycle.
2. When the POST cycle is complete, press the Test button and hold it in for a few seconds before you release it.

   A 10/100 PS configuration label prints. Your configuration label looks similar to Figure 6 on page 29.

Figure 6 • 10/100 PS Configuration Label



3. From the configuration label, you need to look for these numbers:
   - ADDRESS (IP address)
   - SUBNET MASK
   - DEFAULT GATEWAY
   - SERIAL NUMBER
   - HARDWARE ADDRESS (MAC address)
4. On the configuration label that prints out for your 10/100 PS device, circle the aforementioned settings. You can now proceed to *Assigning an IP Address* on page 30.

Assigning an IP Address

Before you can begin working with 10/100 PS, you must get or assign an IP address for the 10/100 PS device.

The four different ways to assign an IP address are:

- ZebraNet Bridge
- DHCP
- Printer LCD
- Telnet

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

With Dynamic Host Configuration Protocol (DHCP)

If your network uses DHCP, your 10/100 PS device is assigned a temporary IP address.

Note • Check with your Network Administrator to see whether your network uses DHCP.

Without DHCP

If your network does not use a dynamic IP addressing system (such as DHCP), you need to set a permanent IP address for the 10/100 PS device. ZebraNet Bridge may be used to set the IP address.

Assigning an IP Address with DHCP

Assigning an IP Address via ZebraNet Bridge

ZebraNet Bridge may be used to set the IP address. Refer to the ZebraNet Bridge Enterprise User Guide for more detailed information.

Assigning an IP address from the Printer LCD

These steps can be used with all printers. However, the liquid crystal display (LCD) instructions are for printers with a control panel (also known as an LCD).

To assign an IP address from the printer LCD, complete these steps:

Important • Your 10/100 PS must have firmware 1.xx.x and higher and your Zebra printer must have firmware x.10 or higher with an LCD.

1. Turn on (I) the printer and wait until the LCD says `PRINTER READY`.
2. See *Wired Network Parameters on the LCD* on page 94 for specific 10/100 PS menu options or your printer's user guide for specific instructions on the operation of your printer.
3. You may edit any of the following network settings in order to communicate with any 10/100 PS in your network environment.

Important • To change any of these settings, you need to enter the printer password. The default password is `1234`.

- `ip resolution` (dynamic, permanent) The printer menu item `IP RESOLUTION` must be set to `PERMANENT` if attempting to assign the IP address from the control panel.
- `default gateway` (default setting of 000.000.000.000)
- `subnet mask` (default setting 255.0.0.0)
- `ip address` (if initial default setting is 0.0.0.0, after 2 minutes this defaults to **192.168.254.254**
- `ip protocol` (gleaning only, RARP, BOOTP, DHCP, DHCP and BOOTP, all)

Assigning an IP address via a Telnet session

The methods used for assigning an IP address with a Telnet session are Static Route and Gleaning.

Important • This applies to any TCP/IP capable workstation/host networked with the Zebra printer. Both, the workstation/host and the 10/100 PS, must be on the same network segment.

Before you can Telnet to the 10/100 PS and configure it, you must first assign the 10/100 PS a temporary IP address.

Static Route

To use this method, complete these steps:

1. Turn on (I) the printer and wait for 2 minutes to allow for the device to complete the self-test.

   During this time, the 10/100 PS performs an address broadcast. If no address is assigned to the unit (via DHCP or BootP), it uses a default address. The default address for 10/100 PS is **`192.168.254.254`**. Print the 10/100 PS configuration label to confirm the address. For details, see *Before You Begin* on page 28.

2. You can use the `route add` command to place the default IP address into the workstation's network routing table.

3. At the workstation/host command prompt (in Windows, at the DOS prompt), type:

   ```
   route add **** "IP address of the workstation" 0
   ```

   where **** is the IP address on the 10/100 PS configuration label

   Note • The zero (0) placed at the end of the “route add” command is optional on some systems.

4. Telnet to the 10/100 PS by typing:

   ```
   "Telnet xxx.xxx.xxx.xxx"
   ```

   The password is `1234`.

5. At this point, you can alter the settings as desired. When complete, do a reset and allow the 10/100 PS self-test to complete before proceeding with any communications activity.

Gleaning

A method by which the 10/100 PS uses the IP address of the first ping packet that is sent to its hardware address.

Note • Gleaning works **only** on local subnets at routers. It does not pass Address Resolution Protocol (ARP) broadcasts.

To use this method, complete these steps:

1. Add an entry to the ARP table that assigns an IP address to an Ethernet (hardware) address.

   The syntax for this command is:

   ```
   arp -s <temporary ip address> <MAC Address>
   ```

   Example • You would type: `arp -s 10.3.50.59 00-07-4d-1D-B9-86`

2. Power cycle the printer.
3. As the printer reboots, begin a continuous ping to the address assigned previously.

   Note • Most UNIX systems use a continuous ping.

   To use a continuous ping from a Windows host, you must issue the following command:

   ```
   ping -t "ipaddress"
   ```

4. When the 10/100 PS begins to respond, stop the ping activity.

   In Windows, Ctrl + C halts the pinging.

5. Telnet to the 10/100 PS and assign the appropriate IP address, subnet mask, and gateway, if applicable.
6. Once this is complete, reset the 10/100 PS.

   For details on resetting the 10/100 PS, see *Reset* on page 83.

Setting and Monitoring Alerts

It is important to understand the relationship between the 10/100 PS and the printer when you are establishing alerts. Here are the relationships you need to be aware of:

- Non-ZebraLink-enabled printers — can only send alerts on a specific set of printer errors that are reported in the IEEE 1284 protocol.
- ZebraLink-enabled printers — ZebraLink allows for the printer to send alerts outside of the IEEE 1284 protocol.

ZebraLink Alerts

ZebraLink Alerts give you the ability to manage your Zebra printers by immediately notifying System Administrators of printer error or warning conditions, which reduces printer downtime and increases application efficiency. Using Web-based configuration tools, selected errors or warning conditions can be routed to a variety of destinations such as email messages, wireless pagers, or ZebraLink Alerts.

Table 2 on page 35 shows the conditions that can trigger alerts and the possible destinations.

Table 2 • ZebraLink Alerts and Destinations

Alert Type	Error Condition
10/100 PS Alerts	• On-line (condition clear) • Off-line • Paper out • Printer error
ZebraLink Alerts	• Media out • Ribbon out • Printhead over-temp warning • Printhead under-temp warning • Head open • Power supply over-temp • Ribbon warning (in direct-thermal mode) • Rewind full • Cut error • Printer paused • PQ job completed • Label taken • Head element out • ZBI (Zebra BASIC Interpreter) runtime error • ZBI (Zebra BASIC Interpreter) forced error • Clean printhead • Media low • Ribbon low • Replace head • Battery low • RFID error • All errors (in RFID printers only) • All errors (in non-RFID printers only) • Power on
ZebraLink Alerts Destinations	Unsolicited Alert messages can be directed to the following destinations: • Email (10/100 PS-specific) • TCP (10/100 PS-specific) • UDP (10/100 PS-specific) • SNMP (10/100 PS-specific) • Serial * • Parallel * • USB *

* Available in ZebraNet Bridge

Using ZebraNet Bridge

ZebraNet Bridge may be used to set and monitor alerts. Refer to the ZebraNet Bridge Enterprise User Guide for more detailed information.

Using WebView

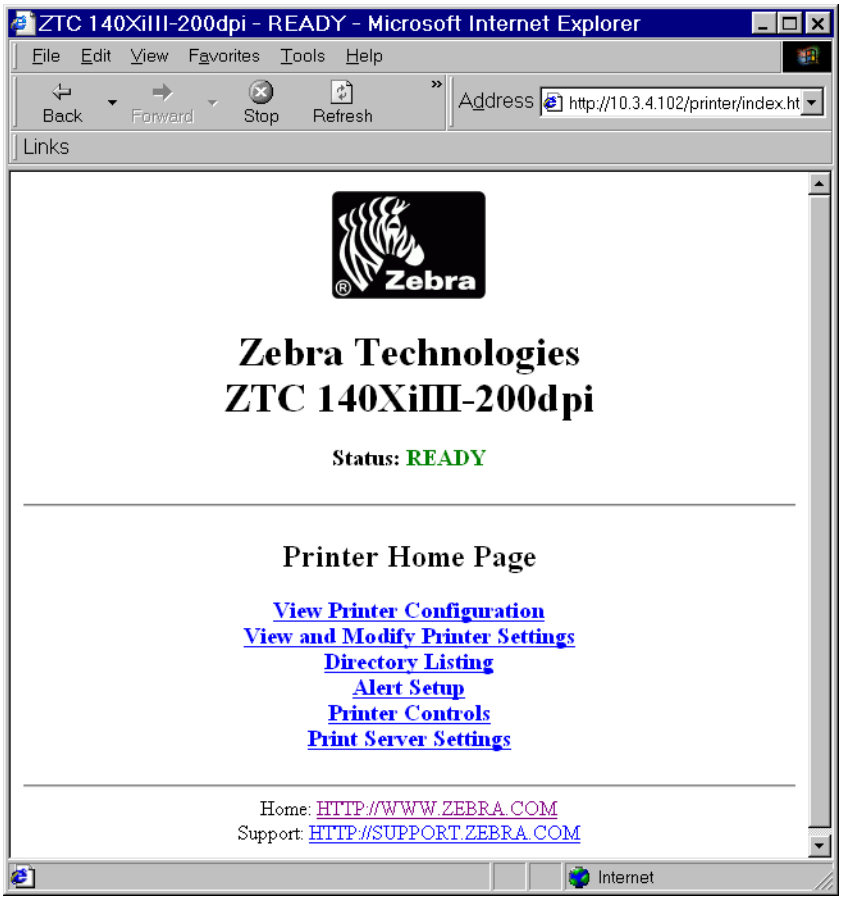
This section has step-by-step instructions for setting up an alert using ZebraLink™ WebView.

Important • If you do not have a ZebraLink-enabled printer, these steps will not work.

To begin receiving notification of errors, complete these steps:

1. Open a Web browser.
2. In the Address text-box, type in the printer's IP address.
   The Printer Home Page opens.

Figure 7 • Printer Home Page



3. From the *Printer Home Page*, click Alert Setup.

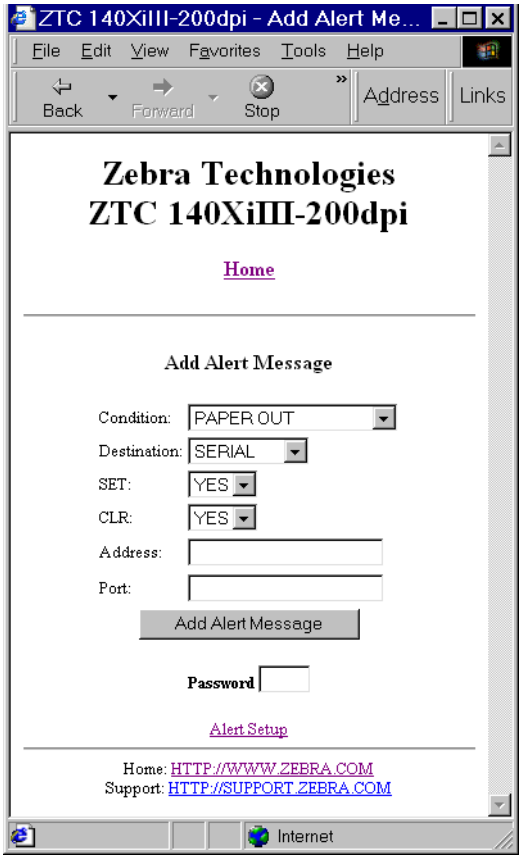
   The Alert Setup page shows a list of message notifications and their respective destinations (if no notifications are listed).

4. To set up notification, go to the Alert Setup page and click Add Alert Message.

   Important • The printer accepts only the last configuration made.

   The Add Alert Message page opens.

Figure 8 • Add Alert



5. Specify the condition to send, such as `HEAD ELEMENT BAD` or `PAPER OUT`.

6. Set destination.

7. In the SET drop-down box, select YES.

   You will be notified whenever your specific condition is detected.

8. In the CLR drop-down box, select YES if you wish to be notified when the specific condition is cleared.

9. If you selected email for your destination, enter a valid email address to which your messages will be sent.

   To receive email alert, you must give your 10/100 PS the IP address of your mail server running SMTP. For instructions, refer to *Status and Configuration* on page 72.

10. If you selected TCP or UDP for your destination, enter the Port Number.

Important • A password is required. If you forget to enter the password, the alerts you just set are deleted.

11. Click Add Alert Message.

12. To save current settings, click Save Printer Setting.

13. Enter the password and click Save Current Configuration.

Checking 10/100 PS Configuration Settings

This section provides steps on how to check the 10/100 PS configuration settings using ZebraNet Bridge and a browser.

Using ZebraNet Bridge

ZebraNet Bridge may be used to check the 10/100 PS configuration settings. Refer to the ZebraNet Bridge Enterprise User Guide for more detailed information.

Using WebView

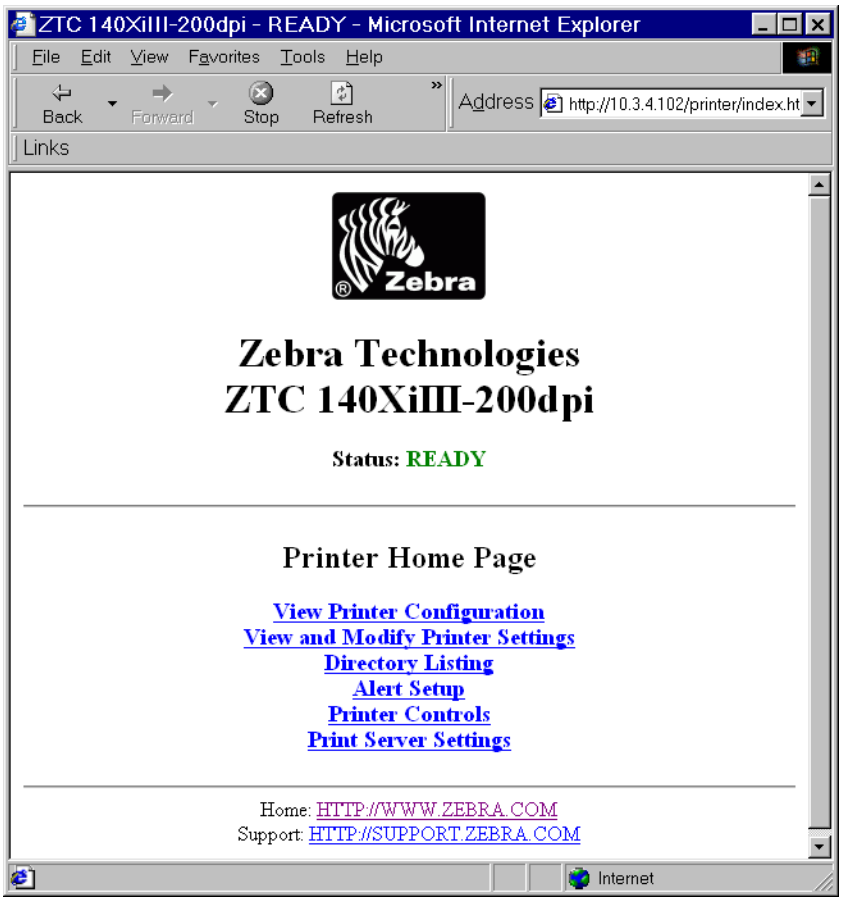
This section provides steps on how to check the 10/100 PS configuration settings using its Web pages.

To access the 10/100 PS settings, complete these steps:

1. Open a Web browser.

2. In the Address text-box, type your printer's IP address, and then press Enter.
   Your browser page looks similar to Figure 9.

Figure 9 • Browser View



Note • Your printer firmware determines how this page looks. This page is from a printer with firmware x.15 and above.

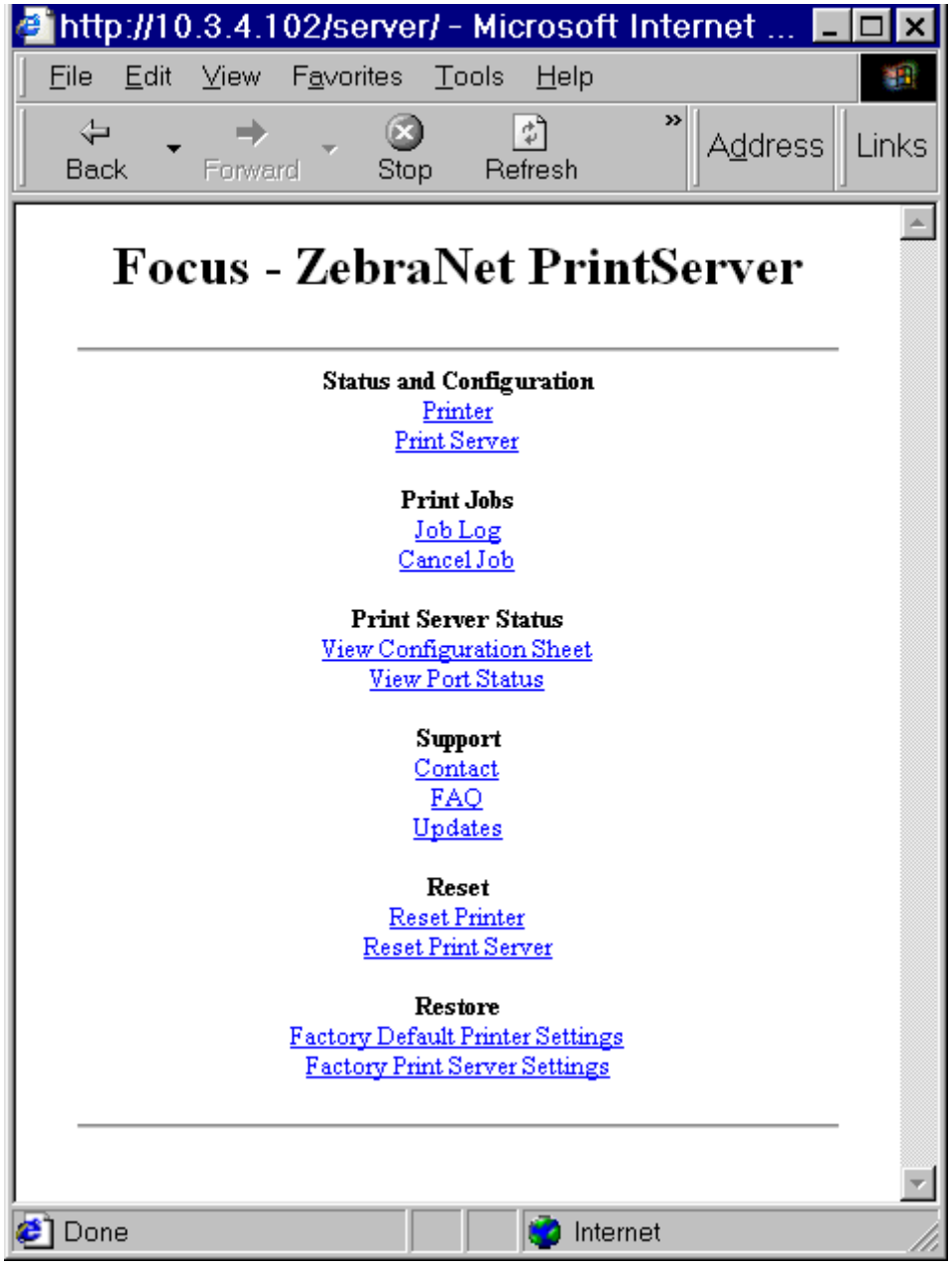
3. From the Printer Home Page, click Print Server Settings.

   The default User ID and password are required.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

The Print Server Configuration Page opens.

Figure 10 • Print Server Configuration Page



4. From the Print Server page, click Print Server.

   The Print Server Configuration page opens.

Figure 11 • Access Settings

Enabling Protocols

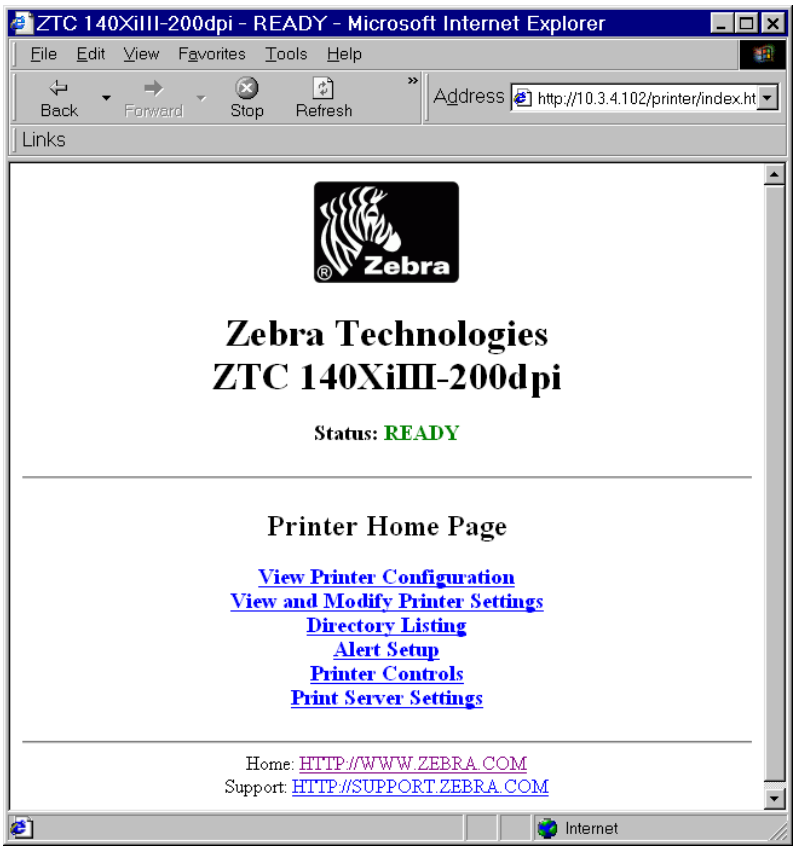
This section contains directions for accessing protocols using WebView.

Using WebView

To enable protocols using WebView, complete these steps:

1. Open a Web browser.
2. In the Address text-box, type your printer's IP address, then press Enter.
   Your browser page looks similar to Figure 12.

Figure 12 • Address Text-Box



3. From the Printer Home Page, click Print Server Settings.

   The default User ID and password are required.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

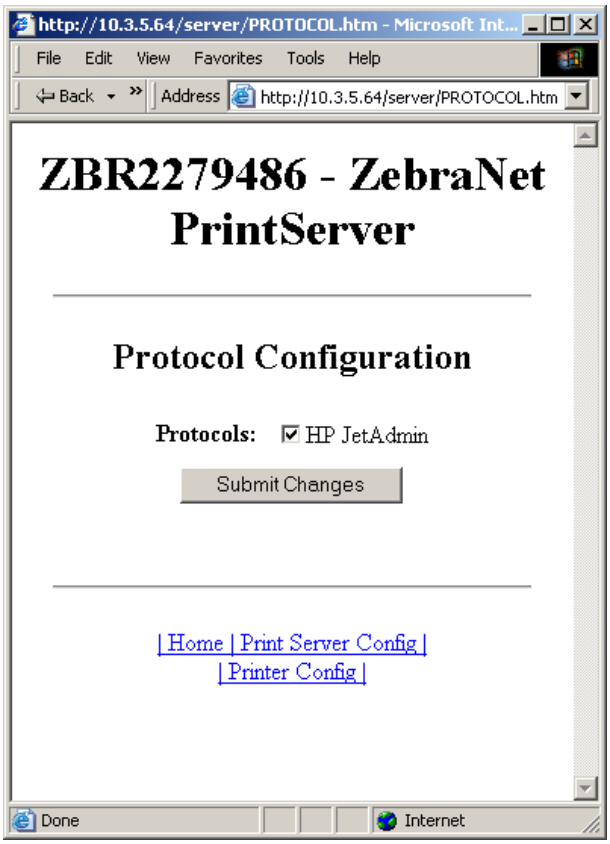
4. From the Print Server page, click Print Server.

   The Print Server Configuration page opens.

Figure 13 • Print Server Configuration

5. From the Print Server Configuration page, click Enabled Protocols.
   The Protocol Configuration page opens.

Figure 14 • Protocol Configuration



6. Select the protocols you want to enable, then click Submit Changes.
   You get a confirmation to reset the unit for changes to take place.

Defaulting the 10/100 PS

This section provides you with instructions for defaulting the 10/100 PS to factory settings using WebView, ZebraNet Bridge, and the Test button.

Using WebView

To default the 10/100 PS to factory settings using WebView, complete these steps:

1. From the ZebraNet PrintServer view, click Factory Print Server Settings.

   The Restore to Factory Defaults page opens:

Figure 15 • Restore to Factory Defaults

2. Enable the check box for the settings you want to reset, and click Submit Changes.

Important • During the reset cycle, the web pages are unavailable. Upon completion, check the 10/100 PS IP address as it may have changed during the reset cycle.

Using ZebraNet Bridge

ZebraNet Bridge may be used default the 10/100 PS to factory settings. Refer to the ZebraNet Bridge Enterprise User Guide for more detailed information.

Using the Test Button

To default the 10/100 PS to factory settings using the Test button, complete these steps:

The Test button is accessed via a small recessed hole on the back of the external 10/100 PS device (see Figure 3 on page 23). For the internal 10/100 PS device, the Test button is located on the back of printer. To press the Test button, you need to insert something small into the hole, like the end of a paperclip.

Note • You must have an active network cable connected to the 10/100 PS device to default the device using the Test button.

1. Turn off (**O**) the printer.
2. With the printer turned off (**I**), press and hold the Test button on the 10/100 PS device and turn on the printer.
3. The status indicator tells you when 10/100 PS has been reset to factory defaults, as follows:
   - If an active network cable is connected to the 10/100 PS, the status indicator turns solid **green**. When this happens, you can release the Test button.
   - If there is **not** an active network cable connected to the 10/100 PS, the status indicator flashes **red**. When this happens, you can release the Test button.
   - For more details on status indicators, see *10/100 PS Network Status/Activity Indicator* on page 99.

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Printing Configurations

This chapter provides information and instructions on configuring your printer for use with a BSD or System V Queue.

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Configuring the Print Queue 50
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Configuring Operating System V Queue for ZebraNet Printing 51
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Berkeley Software Distribution (BSD)-Style Print Queue

BSD is a version of the UNIX OS that distributes software that includes TCP/IP.

Configuring the Print Queue

For remote BSD-style LPD printing, add the 10/100 PS as a remote printer in the /etc/printcap database to each host printing to the 10/100 PS. You can add printcap options as needed. If you are unfamiliar with these options, consult the printer documentation.

Important • You must be logged in as `root`.

The entry looks similar to this:

```
local_print_queue_name|[printer_model_and_manufacturer]:\
:lp=:mx#0:rm=ZebraNet_name:\
:rp=remote_print_queue_name:\
:sd=path_to_spool_directory:lf=just log_file_name
```

`local_print_queue_name` — This defines the name of the printcap entry. It is used by the LPR/LPD utilities to specify which printcap entry is being referenced. Additional printcap entries can be added as needed for different queue types. Each entry must have a unique local_print_queue_name and a different spool directory to work properly. When you are ready to print, use the local_print_queue_name that matches the data type of the file to be printed.

`ZebraNet_name` — This is the name (alias) of the ZebraNet 10/100 PS. This must be the same name as entered in the `/etc/` hosts file or your NIS or DNS system. An IP address may also be used here.

`remote_print_queue_name` — This entry determines the ZebraNet port where the print job will be printed and optionally specifies ASCII printing that must end for `LF1`.

`path_to_spool_directory` — This is the path to a directory where the print jobs will be spooled for this queue. You must create a unique spool directory for each printcap entry.

`log_file_name` — This is the path to a file where error information from the LPD will be logged.

Example • Your printcap entries might look similar to this:

```
Ascii_files|form.feed.Queue_on_Port_1:\
:lp=:mx#0:rm=pserver1:rp=MYQUEUELF1:\
:sd=/usr/spool/myqueuelf1:\
        :lf=/usr/spool/myqueuelf1/queue.log
```

Important • Each printcap entry must have a different spool directory to work properly.

System V Queue Installation

Configuring Operating System V Queue for ZebraNet Printing

This section describes the configuration of the printing system on the UNIX operating system. For clarity and brevity, the following specific names are used to represent general devices or concepts.

`lj4` — The local queue name on the UNIX system to which you want 10/100 PS print jobs directed.

`ZEBRAPRINTER` — The host name or IP address of the remote system that is the 10/100 PS device. For example, to Telnet to the 10/100 PS and invoke the 10/100 PS configuration utility, you would enter:

```
Telnet ZEBRAPRINTER
```

A host name is not required for the 10/100 PS — the IP address can be used.

`yourqueuename` — This is the name of the queue on the ZebraNet and must end with `LF1`.

Prerequisites

Before you proceed, the following prerequisites must be met:

- The name ZEBRAPRINTER and the IP address assigned to the 10/100 PS are in the /etc/hosts file on the UNIX system.
- The LPD must be running on the UNIX system.

UNIX Configuration

To configure the UNIX machine so users can spool print jobs to the PCL print queue on the ZebraNet named ZEBRAPRINTER, complete these steps:

1. Log in to the UNIX machine as root.
2. Type:
   ```
   lpsystem -t bsd ZEBRAPRINTER
   ```
3. Type:
   ```
   lpadmin -p lj4 -s ZEBRAPRINTER!yourqueuename - I any
   ```
4. Type:
   ```
   accept lj4
   ```
5. Type:
   ```
   enable lj4
   ```
6. Try printing by typing the command:
   ```
   lp -d lj4 [filename]
   ```

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Using Printing Protocols

In this chapter, you are given steps to set up your 10/100 PS to support **I**nternet **P**rinting **P**rotocol (IPP) and File Transfer Protocol (FTP).

Contents

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FTP 55

IPP

Important • You must have IPP support on your system.

Internet Printing Protocol (IPP) is an application-level protocol used for distributed printing over the Internet. Using IPP from any standard IPP client, you can transfer jobs to a printer that is connected to your ZebraNet 10/100 PS device and the Internet.

Important • IPP support is not available on all 10/100 PS printers. To be certain you are running the latest version of firmware, visit http://www.zebra.com.

To set up your 10/100 PS to support IPP, complete these steps:

1. Open a browser.
2. Enter the 10/100 PS IPP URL as follows:

   `http://xxx.xxx.xxx.xxx:631/ipp/port1`

   `xxx.xxx.xxx.xxx =` the IP address of the 10/100 PS device

   `:631 =` a fixed value

   `/ipp =` a fixed string designating IPP

   `/port1 =` a fixed value

Example • Your address might look like this:

`http:198.60.248.120:631/ipp/port1`

FTP

Embedded within the 10/100 PS is an FTP server application that processes file transfers from a host computer to the printer.

If the printer is on a network, label formats can be generated and data can be transferred without setting up a print queue.

To send information to the printer, perform these steps:

1. Open a command prompt and type:
   `ftp <IP of 10/100 PS>`

   Example • If the IP address of your 10/100 PS device is `12.3.4.123`, you would type:
   `ftp 12.3.4.123`

   This opens a session with the FTP server.

2. Type your user name and press Enter.

   Note • By default, there is no user name.

3. Type:
   `put < filename>`
   where filename is the location and filename of your ZPL script
   This transfers the file to the printer, and the printer generates a label.

4. To terminate the FTP session, type:
   `quit`

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ZebraLink WebView

This appendix describes the ZebraLink WebView functionality on your ZebraLink-enabled printer with a 10/100 PS.

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WebView

WebView provides the System Administrator or user complete, easy, one-step control over the printing environment. It provides real-time configuration, control, and monitoring capabilities with the convenient graphic interface of a Web browser.

The Web pages returned by Zebra printers are not static. They contain real-time information about the printer's present state of operation, including on-line status, error conditions, and all printing parameters.

Home Page

Note • To access the printer's Web page, you need the IP address. For instructions on getting the IP address, see *Assigning an IP Address* on page 30.

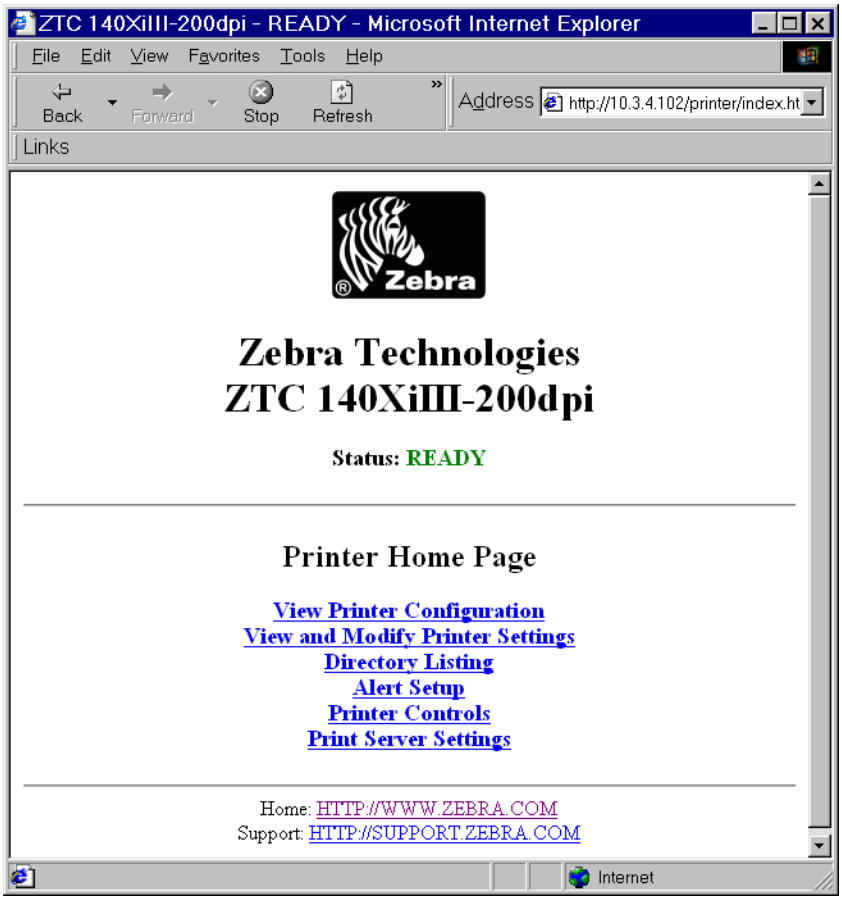
The Home Page is the first Web page that opens. It is a page with a menu of hyperlinks. Each hyperlink allows you to make modifications to the printer, 10/100 PS, and network settings. The other changeable settings on the Home Page include:

- Network Status, Error, and Warning reports
- ZebraNet 10/100 PS configuration
- Printer settings
- Directories of objects stored in Flash memory and RAM devices
- Objects, stored fonts, images, programs, and ZPL II formats
- Zebra Technologies support and home pages

To open the WebView of your printer, complete these steps:

1. Open a Web browser.
2. In the Address text-box, type your printer's IP address, and press Enter.
   The Printer Home Page opens.

Figure 16 • Printer Home Page



View Printer Configuration

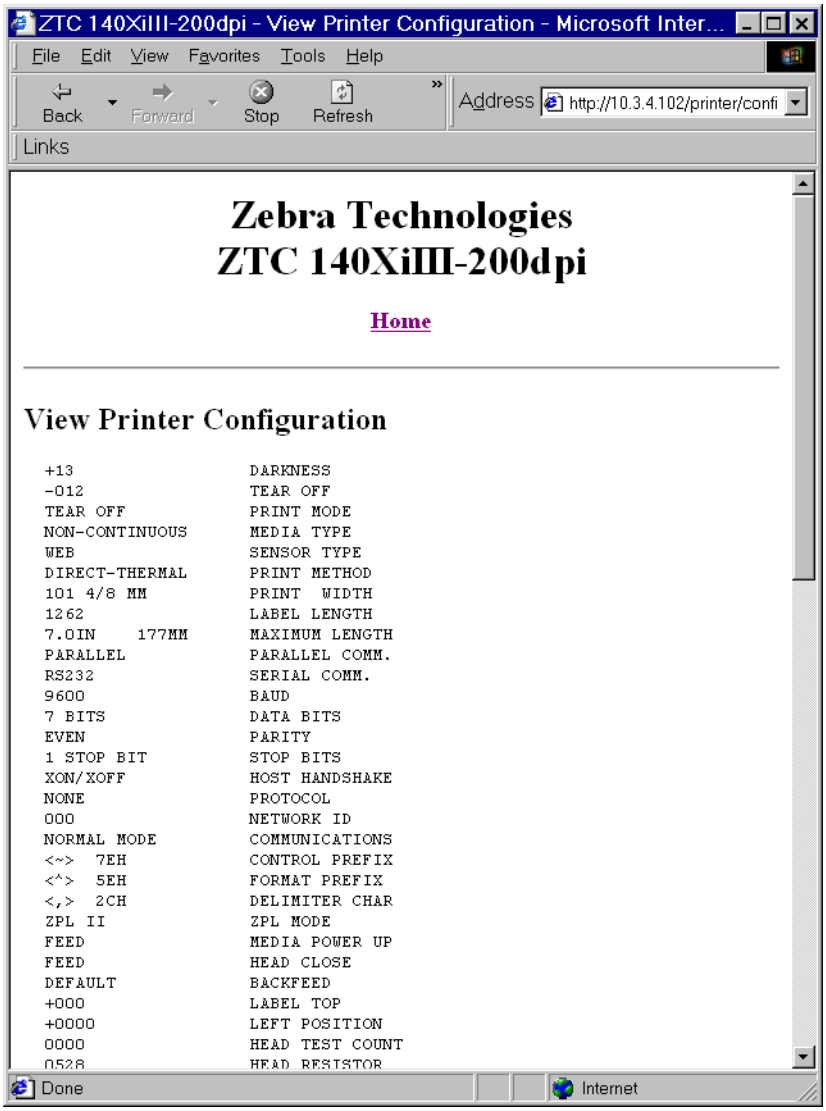
The View Printer Configuration menu option provides accurate, up-to-the-minute information on the printer's current state. An administrator can conveniently find any information on the Virtual Configuration Label and also check on the status of printer ports.

To see the View Printer Configuration menu option, complete these steps:

1. From the Printer Home Page, click View Printer Configuration.

   The WebView displays the configuration settings.

Figure 17 • Configuration Settings



2. To update the printer information from this view, click Refresh and the printer sends current information to the Web browser.

3. When you are finished reviewing:

If...	Then...
You want to return to the Home page	Click the Home link.
You want to print a label	Scroll to the bottom of this page and click Print Label.

View and Modify Printer Settings

This section provides you with steps for accessing and modifying printer settings with a ZebraLink-enabled printer. It also provides illustrations of the various pages you can access.

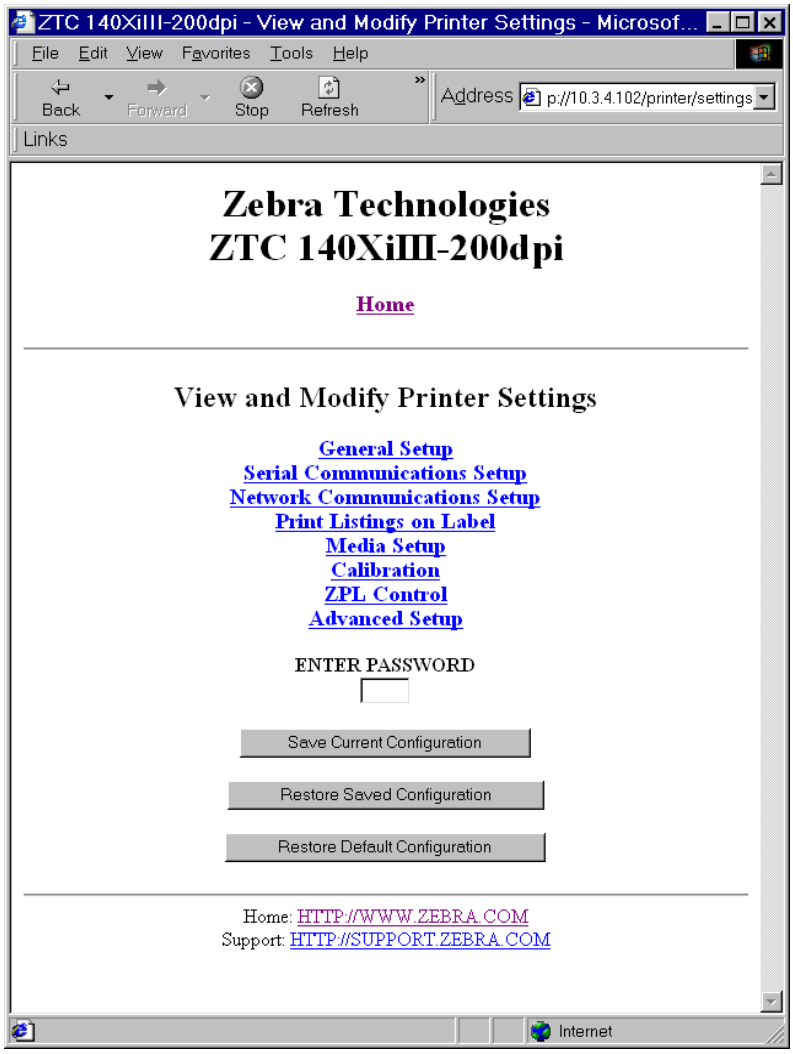
To apply changes made in this section, the default User ID and password are required.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

To view and modify printer settings, complete these steps:

1. From the Printer Home Page, click View and Modify Printer Settings.
   The View and Modify Printer Settings page opens.

Figure 18 • View and Modify Printer Settings



2. On the View and Modify Printer Settings page, you have a menu to choose from. The section that follows identifies what each menu option page.

Table 3 • Menu Options

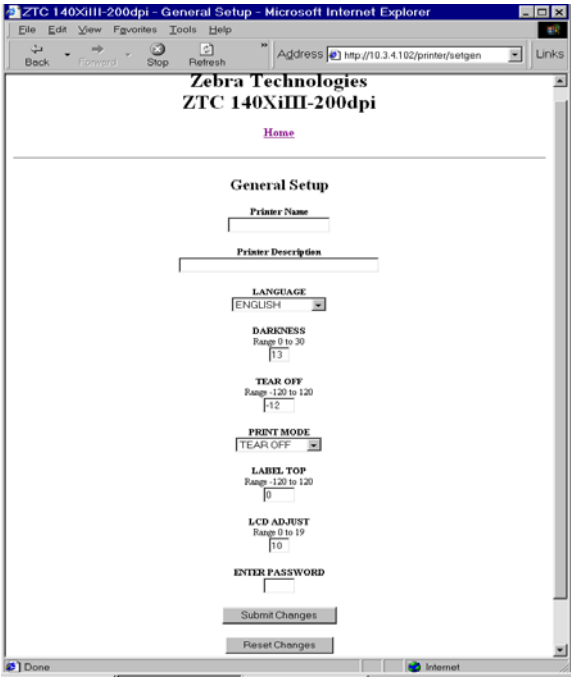
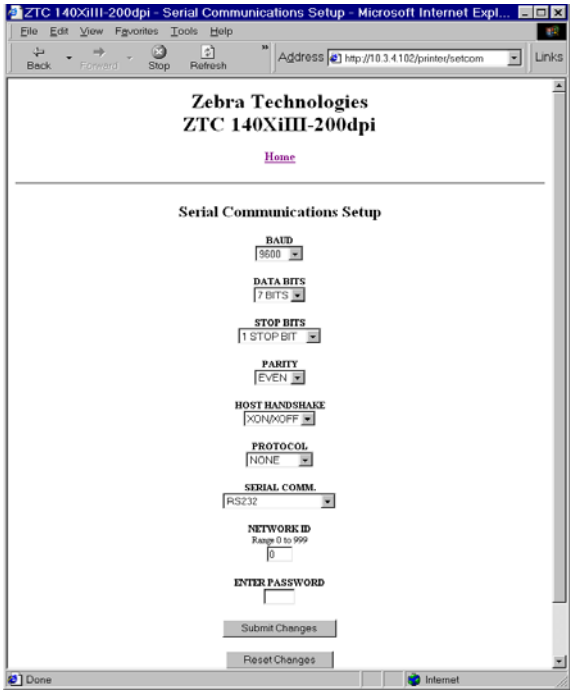
General Setup	
Serial Communications Setup	

Table 3 • Menu Options (Continued)

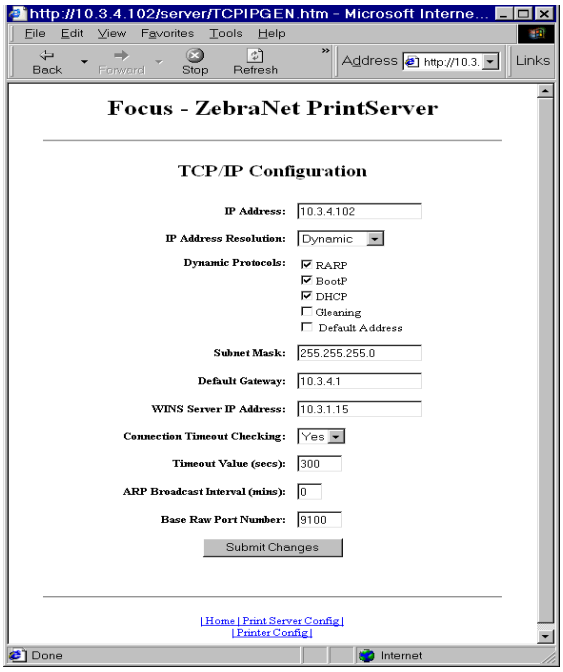
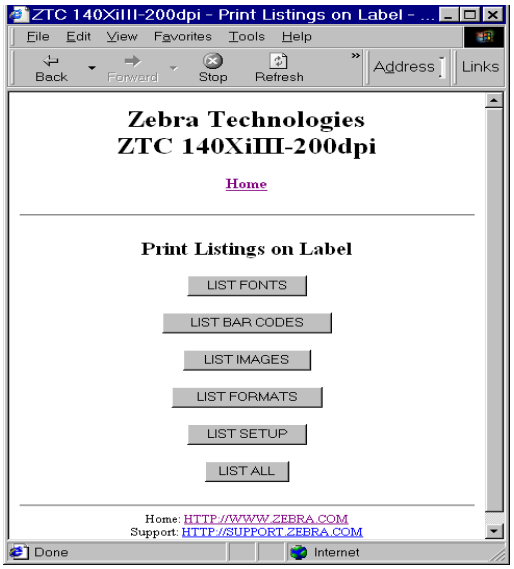
Network Communications Setup	
Print Listings on Label	

Table 3 • Menu Options (Continued)

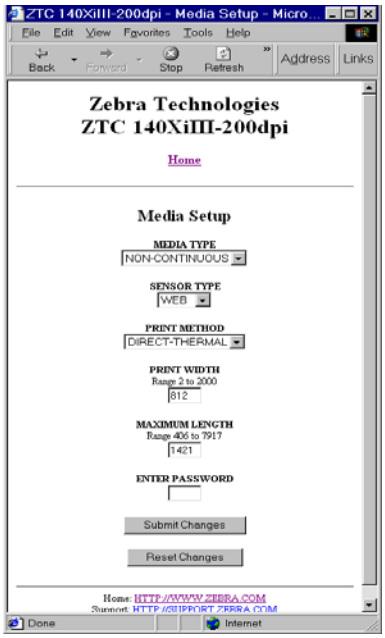
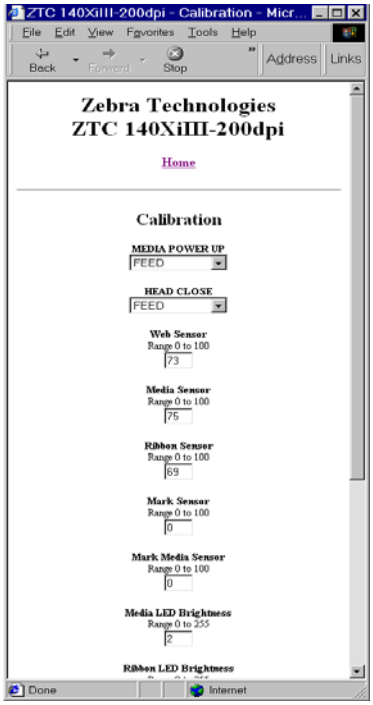
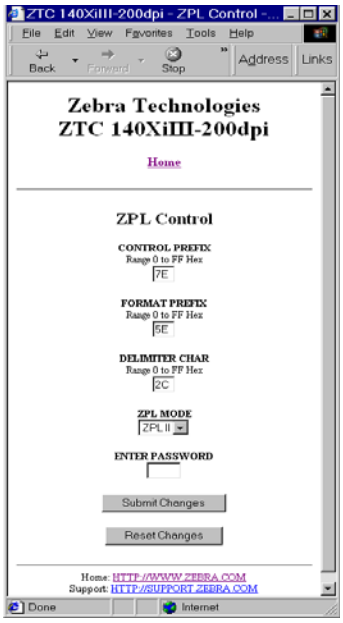
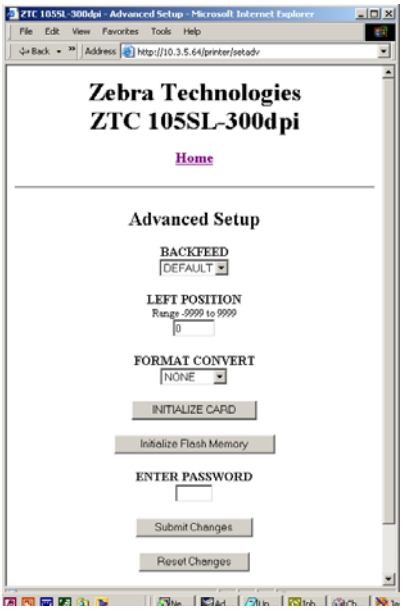
Media Setup	
Calibration	

Table 3 • Menu Options (Continued)

ZPL Control	
Advanced Setup	

Directory Listing

The directory page provides a listing of all file system devices (B:, E:, R:, Z:). The size, name, and location of each stored object appears.

Buttons are available to perform file management operations on the objects. The file management operations include:

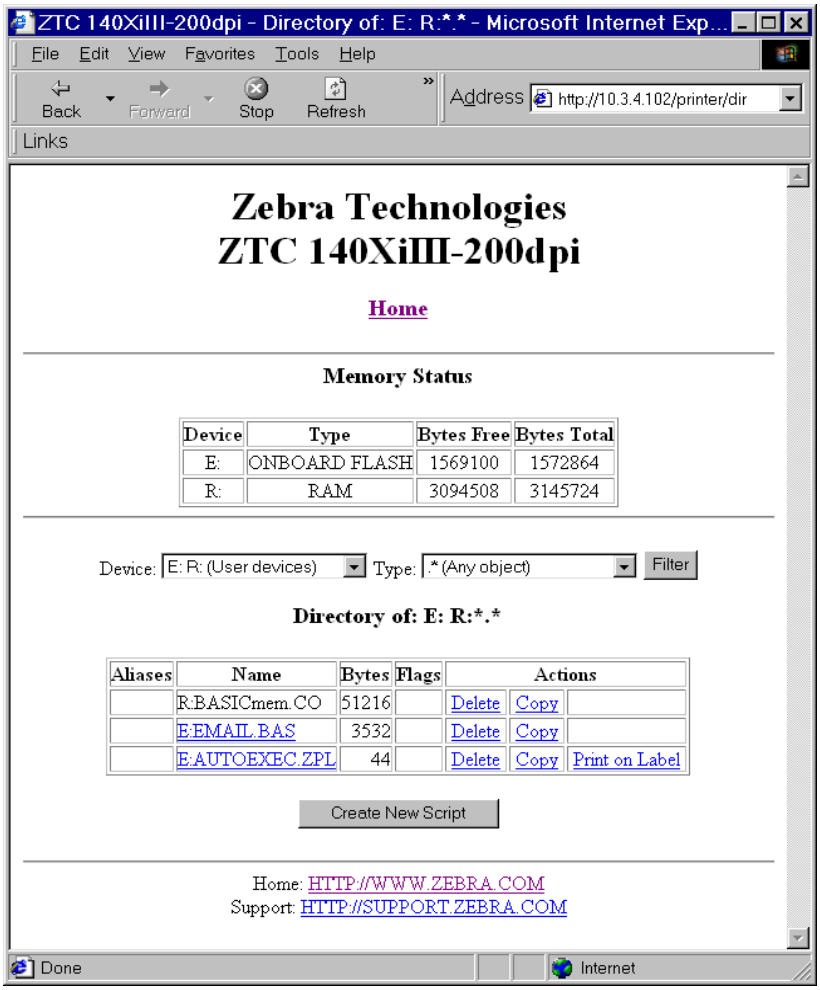
- Delete object — Not available for objects in read-only memory (Z:).
- Copy object to a new name and/or device — Not available for objects in read-only memory (Z:).
- Run a ZBI program — Available only if the object is a stored ZBI program. For details, see *Zebra BASIC Interpreter (ZBI)* on page 70.

To view the Directory Listing, complete these steps:

1. From the Printer Home Page, click Directory Listing.

   This page opens.

Figure 19 • Directory Listing



2. There are several fields to select in this view.
3. To create a script, click Create New Script.

Printer Controls

This page offers control over basic printer functions.

Other functions are also accessible from this page. These include:

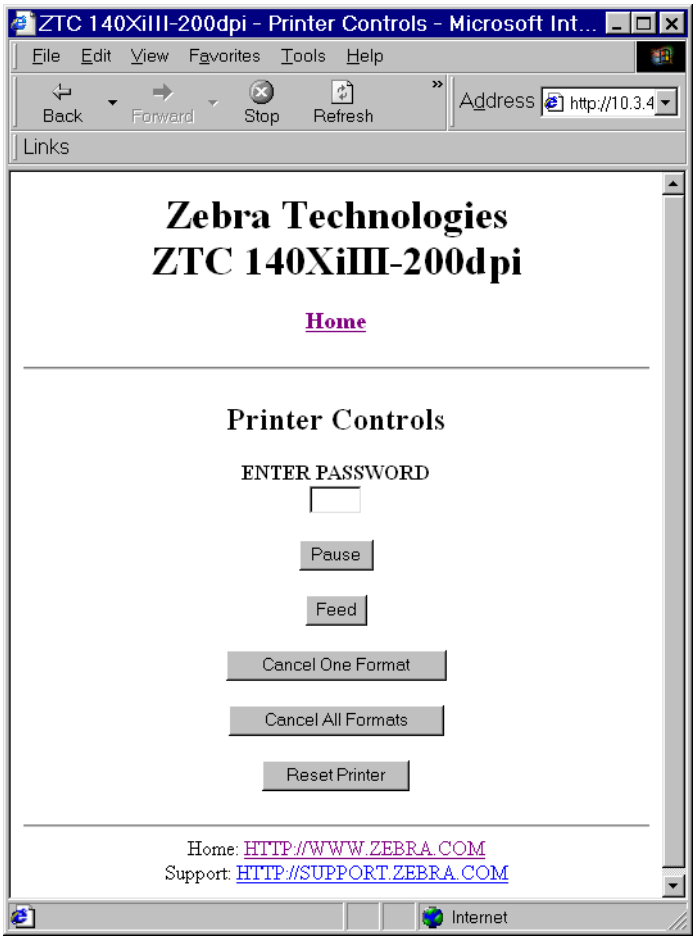
- `Feed` — causes printer to feed one label.
- `Cancel One Format` — cancels the currently printing format.
- `Cancel All Formats` — cancels all formats.
- `Reset Printer` — causes printer to perform its standard reset without cycling power.

To view Printer Controls, complete these steps:

1. From the Printer Home Page, click Printer Controls.

   This Printer Controls page opens.

Figure 20 • Printer Controls



Important • In this view, you must have administrative rights to make changes to the printer controls.

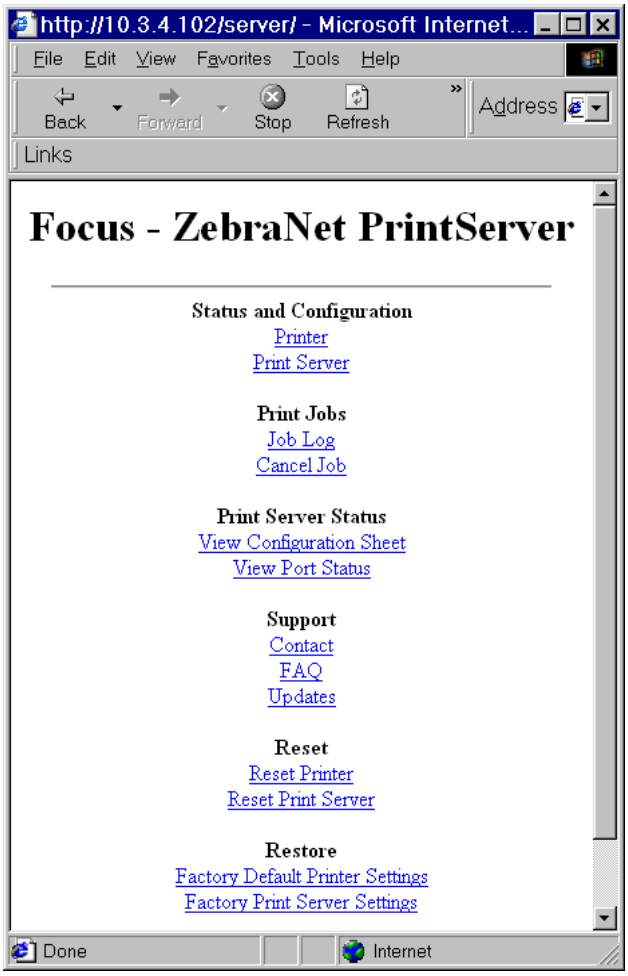
Print Server Settings

This section provides you with instructions for viewing the current printer settings.

To view the print server menu, complete these steps:

1. From the Printer Home Page, click Print Server Settings.
   The PrintServer page opens.

Figure 21 • PrintServer Page



Zebra BASIC Interpreter (ZBI)

ZBI allows you to maximize printing options through custom programs written for your specific needs. ZBI programs can be viewed, modified, and run from the Directory Listing Page, see *Directory Listing* on page 67. ZBI is an optional feature.

B

10/100 Print Server

This appendix provides you with details on the 10/100 PS features that were not covered in the chapter *Getting Started* on page 27.

Contents

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10/100 PS Features

This section covers features available for the 10/100 PS *only*, not the printer's features. Some of the features you access in this section prompt you to enter the default user ID and password.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

Status and Configuration

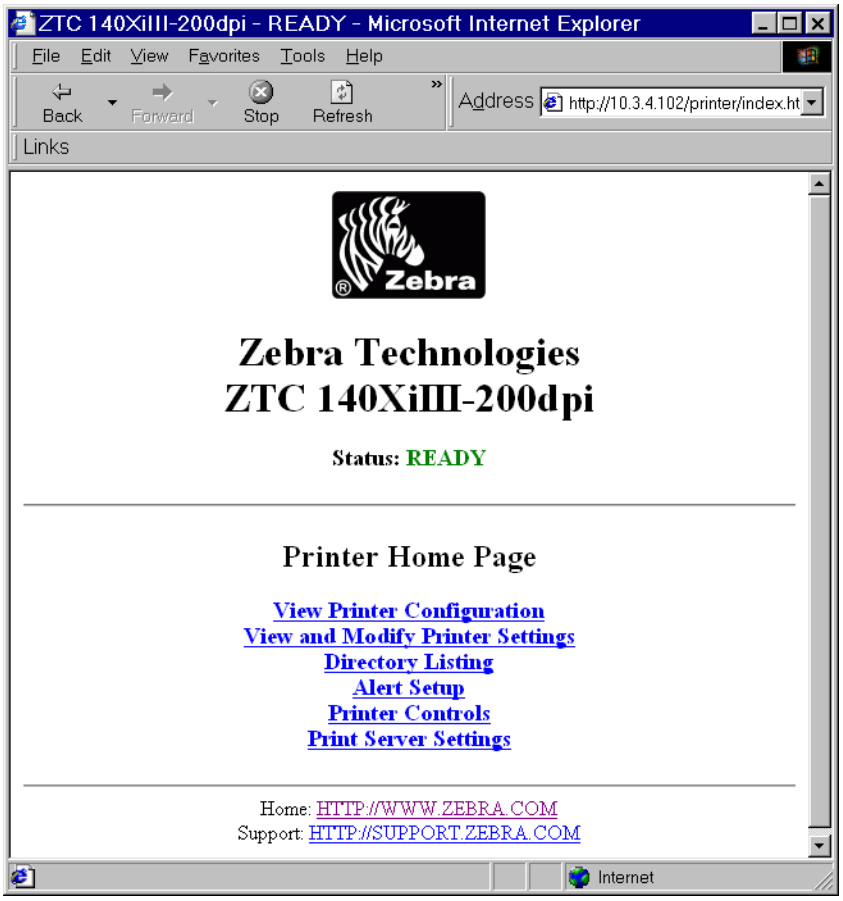
The steps that follow are based on the navigation of a ZPL printer using firmware X.15 or above.

Important • You can upgrade your firmware by visiting our web site: http://www.zebra.com.

To access the print server settings, complete these steps:

1. Open a Web browser.
2. In the Address text-box, type your printer's IP address, and press Enter.
   The Printer Home Page opens.

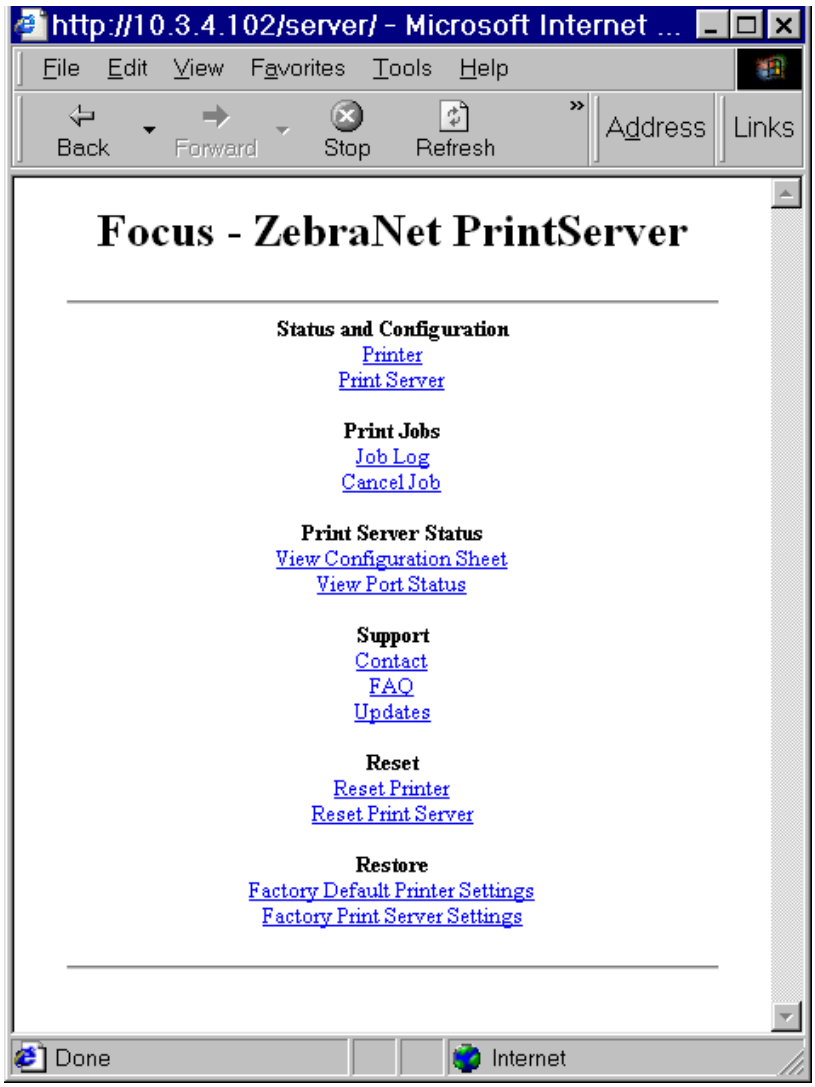
Figure 22 • Printer Home Page



3. From the Printer Home Page, click Print Server Settings.

   The Print Server Settings Page opens.

Figure 23 • Print Server Settings Page



4. From the Print Server Settings Page, click Print Server.

   The Print Server Configuration page opens.

Figure 24 • Print Server Configuration

5. In the Print Server Configuration page, you have a menu from which to choose. Table 4 identifies each menu option page.

Table 4 • Menu Options

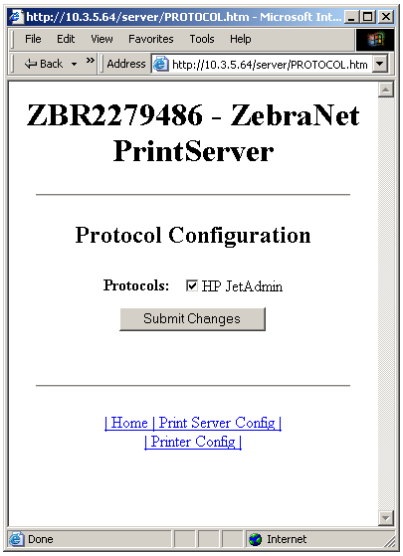
Enabled Protocols Modifies the protocols to be used: NetWare, HP JetAdmin, or both. Enabling Hewlett-Packard's HP JetAdmin Support allows the status from the Zebra device to display in HP JetAdmin utility.	

Table 4 • Menu Options (Continued)

TCP/IP Configuration

You can change the TCP/IP configuration of the 10/100 PS.

- **IP Address:** Use this feature to set the IP address if using the Permanent addressing method.
- **IP Address Resolution:** Use this feature to select the addressing method to use (Dynamic or Permanent).
- **Dynamic Protocols:** Use this feature to select the Dynamic Addressing method to use at startup. Choices include RARP, BOOTP, DHCP, Gleaning or Default Address.
- **Subnet Mask:** Use this feature to set the subnet mask. The subnet mask must follow the format XXX.XXX.XXX.XXX, where each XXX is a number between 0 and 255.
- **Default Gateway:** Use this feature to set the default gateway. This gateway will be used whenever messages need to be sent to another network. This gateway address must follow the format XXX.XXX.XXX.XXX, where each XXX is a number between 0 and 255.
- **WINS Server IP Address:** Use this feature to set or view the IP address of the WINS Server.
- **Connection Timeout Checking:** Use this feature to enable or disable the Connection Timeout feature. The timeout is used to close network TCP/IP connections that are idle for more than the number of seconds entered in the Timeout Value.
- **Timeout Value (secs):** Use this feature to set the Connection Timeout Value. The Valid range is 10 to 3600 seconds. The default is 300 seconds.
- **ARP Broadcast Interval (mins):** Use this feature to set interval for sending an ARP Broadcast. The valid range is 1 to 30 minutes. Address Resolution Protocol (ARP) broadcast packets allow other network devices to associate the print server's IP Address with its hardware address.
- **Base Raw Port Number:** Use this feature to set the raw TCP port that the print server will use for printing tasks. The default is port 9100.

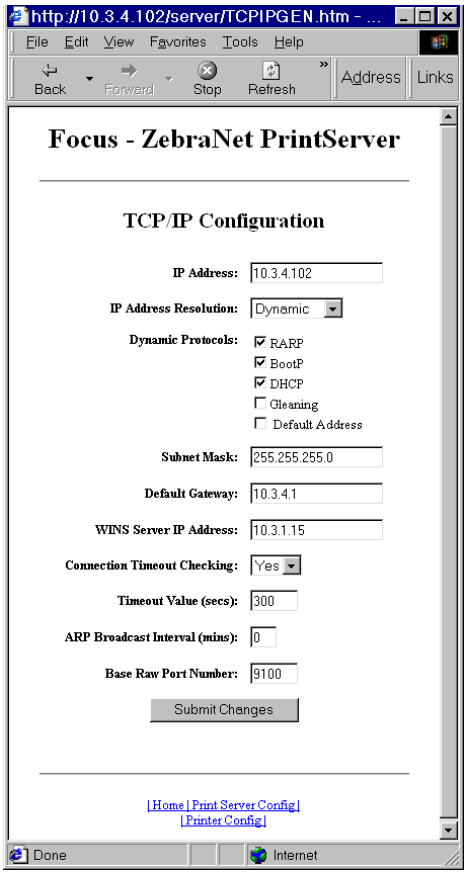


Table 4 • Menu Options (Continued)

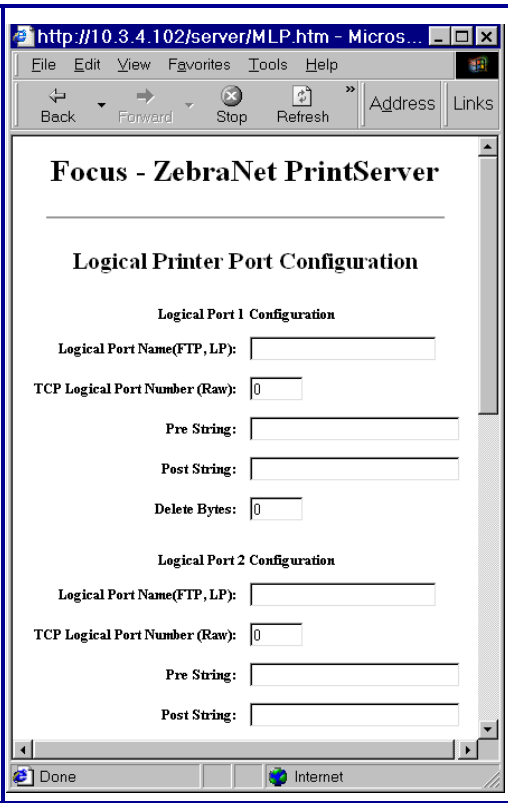
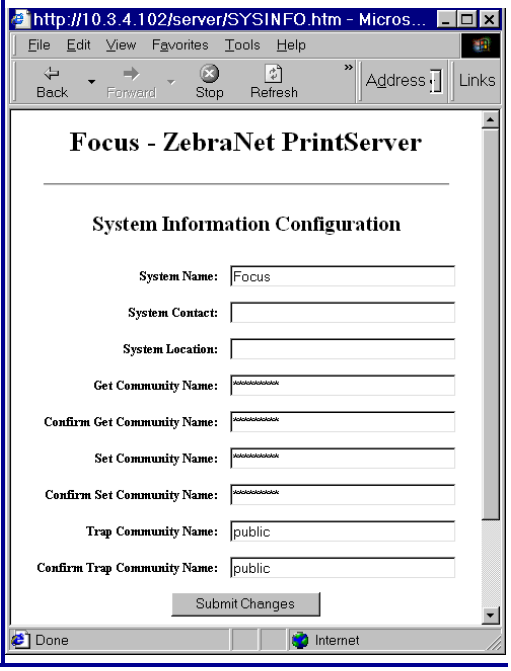
TCP/IP Logical Printing Ports Logical printers allow you to set up multiple pre- and post-processing configurations for each output port. Each logical port configuration can perform the following: • Add user-configured strings before and after the print data. • Remove unwanted characters from the beginning of the print data. • Four logical printer configurations are supported for each output port on the printer. The configurations can be assigned to any port, and all of these configurations can be assigned to a single output port.	
System (SNMP) This feature gives you the ability to manage multiple devices on a network, be it printers, computers, or other network-attached devices. On this page, you can define the SNMP system name, system location (10/100 PS description), and other SNMP settings for your 10/100 PS.	

Table 4 • Menu Options (Continued)

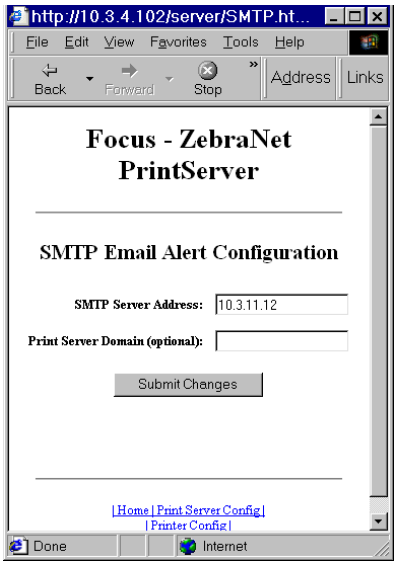
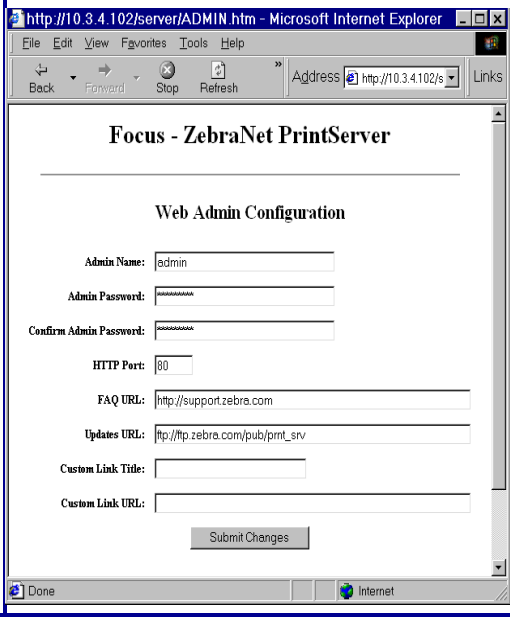
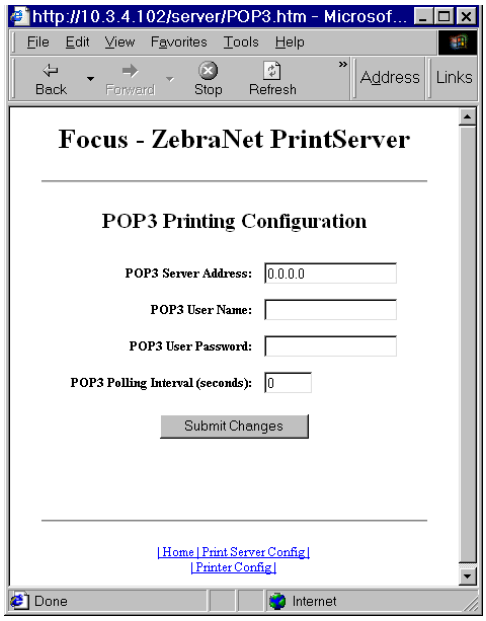
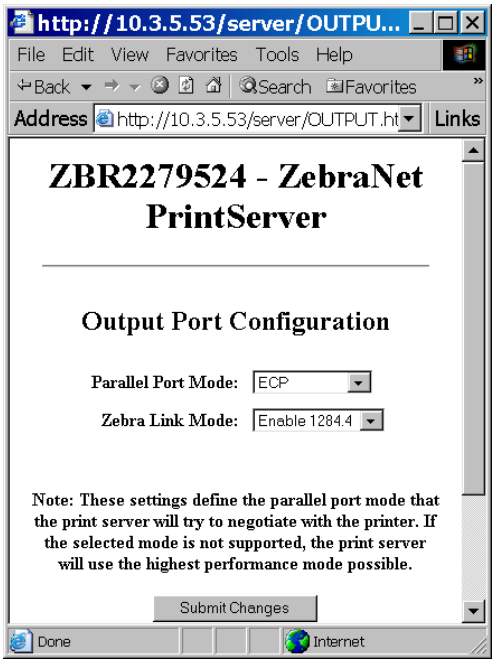
SMTP Email Alert Configuration This feature allows you to enter data regarding System Information on the network that is being used. Typically, a Network Administrator would use this.	
Web Admin This page allows you to configure the Admin name and password. Links to upgrades and support information can also be altered. **Note •** The printer and print server password can be changed on ZPL printers with firmware x.10 or higher.	

Table 4 • Menu Options (Continued)

POP3 Email Printing This feature helps you set up the print server to receive email messages containing formats that can be printed. The POP3 settings must be set to retrieve emails from the email server. **Important** • Zebra recommends setting the POP3 polling interval no lower than 30. Some email servers will lock accounts after repeated login attempts.	

Output Port Configuration
This feature allows you to change the Parallel Port Mode setting.
Selections for Parallel Port Mode include Compatibility, Nibble, Byte, and ECP.
• Compatibility is a unidirectional forward mode used only for sending data to the printer.
• Nibble, Byte, and ECP modes are all bidirectional modes. Data can be sent to and from the printer.
  • Nibble mode sends only 4 bits of data at a time in the reverse direction from the printer to the print server. When in nibble mode, communications from the print server to the printer are accomplished via compatibility mode.
  • Byte mode sends a full byte of data at a time in the reverse direction from the printer to the print server. When in byte mode, communications from the print server to the printer are accomplished via compatibility mode.
  • ECP mode is a complete forward and reverse mode that more efficiently transfers data.
	

Print Server Status

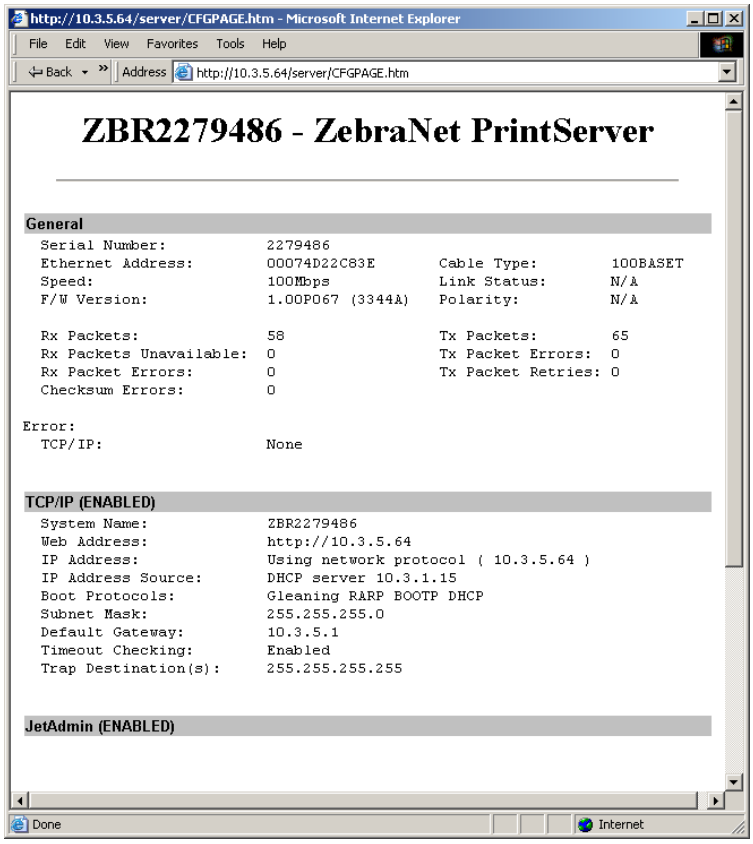
From the Print Server page in the Print Server Status section, you can access the 10/100 PS configuration page and port status.

To open the 10/100 PS configuration page, complete this step:

1. From the PrintServer page, click View Configuration Page.

   The Configuration Page opens.

Figure 25 • Configuration Sheet



To view the port status, complete this step:

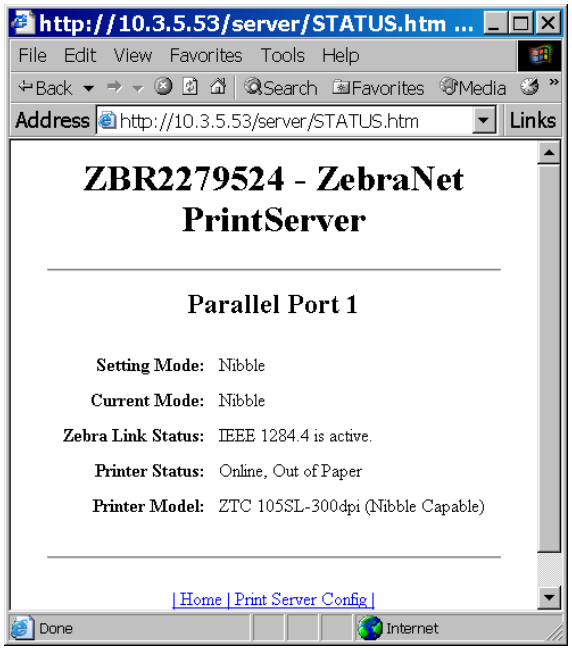
The default User ID and password are required to access this page.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

1. From the Print Server page, click View Port Status.

   The Port Status page opens.

Figure 26 • Port Status



Reset

From the Print Server page in the Reset section, you can reset the 10/100 PS configuration settings to what they were before you made the most recent changes.

To reset the 10/100 PS, complete these steps:

1. From the Print Server page, click Reset Print Server.

   The Reset Device page opens.

Figure 27 • Reset Print Server

2. To reset 10/100 PS, click Yes.

Restore

From the Print Server page, in the Restore section you can restore the 10/100 PS to the default factory settings.

To restore 10/100 PS to the default factory settings, complete these steps:

1. From the Print Server page, click Factory Print Server Settings.

   The Restore To Factory Defaults page opens.

Figure 28 • Restore to Factory Settings

2. Make the selections you want, and click Submit Changes.

Setting the Primary Network Print Server

The ZM400, ZM600, and Xi4 printers support the simultaneous installation of an internal, external, and a wireless print server. Even though all three print servers may be installed, only one is connected to the network and is the active print server. Table 5 outlines priorities and identifies which device becomes the active print server when multiple print servers are installed.

Table 5 • Primary Print Server

If the Primary Network is set to:	Installed and Connected to a Live Ethernet Network			Then, the Active Print Server will be:
	Internal	External	Wireless*	
Wired	X	X	X	Internal
		X	X	External
			X	Wireless
Wireless	X	X	X	Wireless
	X	X		Internal
		X		External

*NOTE: A Wireless Option board must have an active radio that can properly associate to an access point.

This section provides you with steps for changing the primary network.

To change the primary network, complete these steps:

1. From the Printer Home Page, click View and Modify Printer Settings.

   The View and Modify Printer Settings page opens.

Figure 29 • View and Modify Printer Settings

2. When prompted, enter the printer's password.

   To apply changes made in this section, you need to use the default password for your printer.

Important • For specific information on the default User ID and/or default password, see *Default User ID and Password* on page 28.

3. Click Network Configuration.

   The Network Configuration page opens.

Figure 30 • Network Configuration Page

4. Click Primary/Secondary Settings.

   Figure 31 opens.

Figure 31 • Primary/Secondary Settings Page

5. If you wish to load network settings from the external print server, click YES.

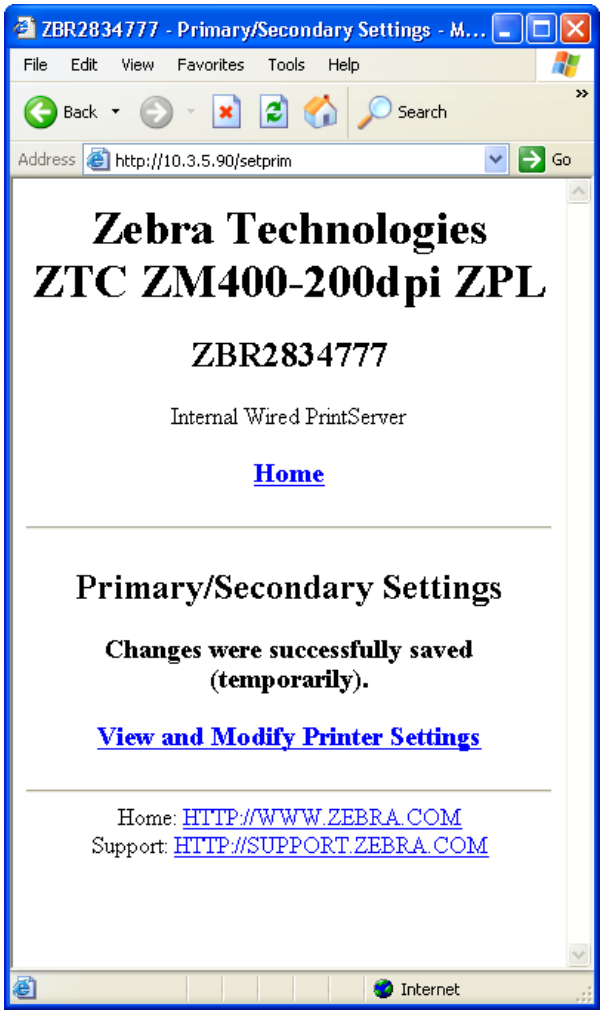
6. To change the primary network, click on the Primary Network drop-down. Select either Wired or Wireless print server as your primary network.

   Table 5 on page 85 outlines priorities and identifies which device becomes the active print server when multiple print servers are installed.

7. Click Submit Changes to apply your changes or click Reset Changes to revert back to previous settings.

   Figure 32 opens to confirm your settings have been temporarily saved.

Figure 32 • Primary/Secondary Settings Saved



8. Click on View and Modify Printer Settings link.
9. From the View and Modify Printer Settings page, click on Save Current Configuration. This will permanently save your settings.

TCP/IP Settings

For the ZM400, ZM600, and Xi4 printers, the TCP/IP settings may be viewed and modified in this section. Several of these settings include:

- IP Address
- IP Protocol
- Subnet mask
- Default gateway

To change the TCP/IP settings, complete these steps:

1. From the Printer Home Page, click View and Modify Printer Settings.
   The View and Modify Printer Settings page opens.

Figure 33 • View and Modify Printer Settings

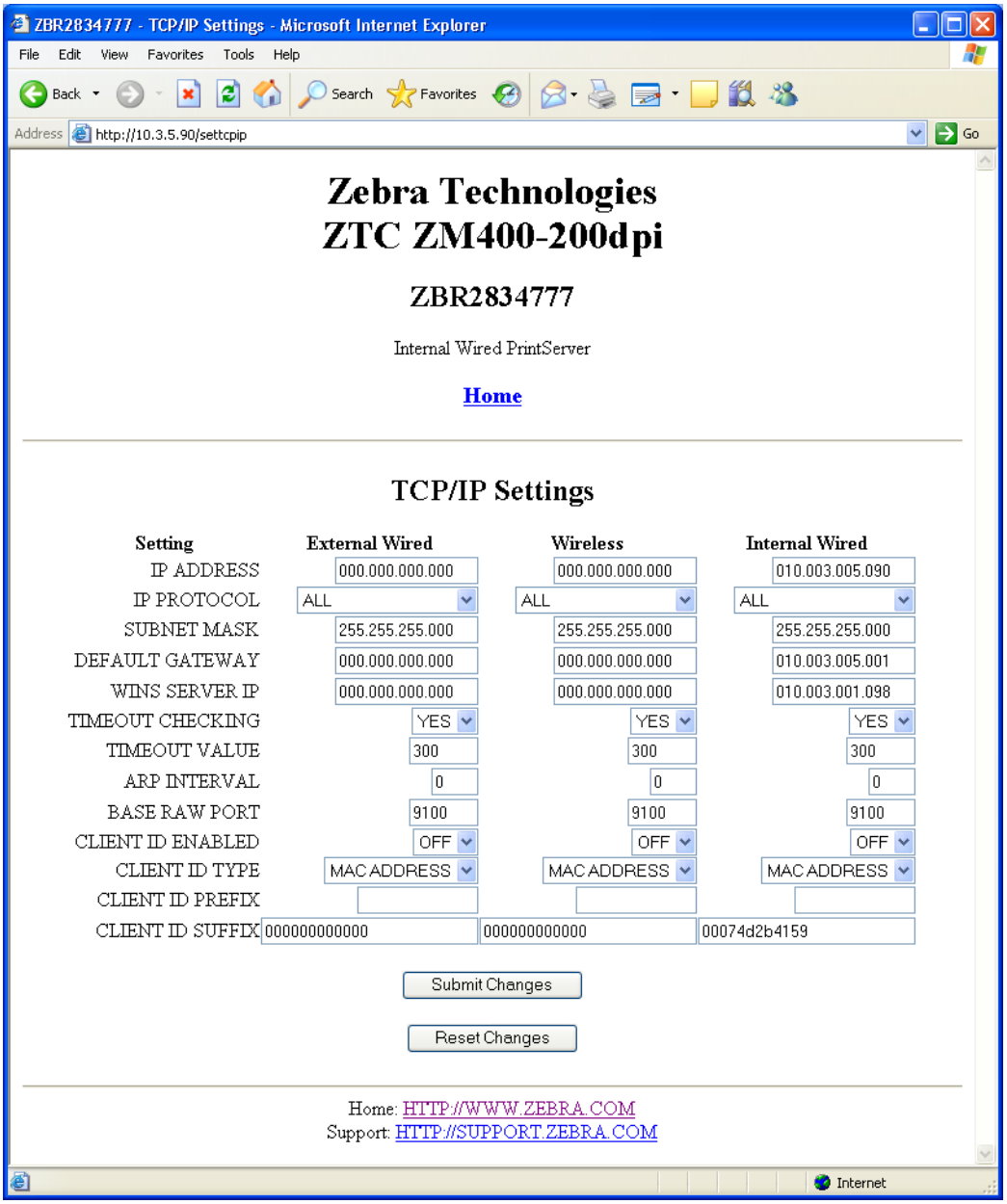
2. Click on Network Configuration.
   The Network Configuration page opens.

Figure 34 • Network Configuration Page

3. Click TCP/IP Settings.

   Figure 35 opens.

Figure 35 • TCP/IP Settings Page



4. From the TCP/IP Settings page, you can modify settings for all installed print servers.

Note • The ZM400, ZM600, and Xi4 printers support the simultaneous installation of an internal, external, and a wireless print server. See Table 5 on page 85 for more detailed information on priorities and setting the active print server when multiple print servers are present.

5. Click Submit Changes to accept and save your changes or click Reset Changes to revert to your previous settings.

C

Control Panel

This appendix provides you with details on the Control Panel menu options.

Contents

Control Panel Menu Options 94
Wired Network Parameters on the LCD. 94

Control Panel Menu Options

Control Panel (or Liquid Crystal Display—LCD) menu options only appear if a 10/100 PS is installed. The control panel parameters are somewhat different for different printers. Refer to the user guide for your printer for specific instructions on how to modify the control panel parameters.

Wired Network Parameters on the LCD

Table 6 identifies the wired network parameters available on your Zebra *Xi*III*Plus*, Z4Mplus/Z6Mplus, 105*SL*, *PAX*4, Xi4, ZM400/ZM600, and S4M printers with a 10/100 PS installed.

For wireless network parameters, see the Zebranet® Wireless User Guide.

Table 6 • Wired Network Parameters

XiIIIPlus	Z4Mplus/Z6Mplus	105*SL*	PAX4	Xi4	ZM400/ZM600	S4M	LCD Option	Details
✓	✓	✓	✓				WIRED PS CHECK?	This tells if the printer searches for a wired print server at bootup.
				✓	✓		PRIMARY NETWORK	This allows you to see if the printer is using a IP setting from the wireless or a wired print server at bootup.
✓	✓	✓	✓	✓	✓		LOAD LAN FROM? The Xi4 and the ZM400/ZM600 LCD menu will appear as: LOAD FROM EXT?	This determines if the printer uses IP settings from the printer or the print server at bootup.
✓	✓	✓	✓	✓	✓		ACTIVE PRINTSRVR	This allows you to see which print server is being used.
✓	✓	✓	✓	✓	✓	✓	IP PROTOCOL The S4M LCD menu will appear as: OBTAIN IP ADDRESS followed by: CHANGE IP PROTOCOL	The allows you to see if the user (permanent) or the server (dynamic) selects the IP address.

Table 6 • Wired Network Parameters

XiIIIPlus	Z4Mplus/Z6Mplus	105SL	PAX4	Xi4	ZM400/ZM600	S4M	LCD Option	Details
✓	✓	✓	✓	✓	✓	✓	IP ADDRESS The S4M LCD menu will appear as: CHANGE IP ADDRESS	This allows you to modify this setting, only when Permanent is select for OBTAIN IP ADDRESS.
✓	✓	✓	✓	✓	✓	✓	SUBNET MASK The S4M LCD menu will appear as: CHANGE SUBNET MASK	This allows you to view the subnet mask.
✓	✓	✓	✓	✓	✓	✓	DEFAULT GATEWAY The S4M LCD menu will appear as: CHANGE DEFAULT GATEWAY	This allows you to view the default gateway.
✓	✓	✓	✓	✓	✓	✓	MAC ADDRESS	This allows you to view the MAC address for the current wireless radio card.
✓	✓	✓	✓	✓	✓	✓	RESET NETWORK	This allows you to reinitialize the wireless radio card and the print server (wired or wireless).

Notes •

D

Hardware Troubleshooting

This section provides you with solutions to known issues.

Contents

Troubleshooting the 10/100 PS 98
Resetting to Factory Default 98
10/100 PS Status Indicator 98
10/100 PS Network Status/Activity Indicator 99
ZebraNet Bridge Discovery or Configuration Problems 100
Unable to Print 100
Unable to Configure Device 102
HP JetAdmin or HP Web JetAdmin 102

Troubleshooting the 10/100 PS

Resetting to Factory Default

Note • You must have an active network cable connected to the 10/100 PS device to default the device using the Test button.

To reset the 10/100 PS configuration parameters to the factory defaults, press the Test button and hold it in while turning on the printer. Keep the test button pressed until the Status Indicator light turns green, then release the test button. After approximately 20 seconds, a configuration label prints automatically.

10/100 PS Status Indicator

A bi-color Status Indicator displays the operational status of the 10/100 PS. The following conditions might occur:

- During normal operation, the LED is solid **green** for more than 30 seconds.

  This indicates all the hardware is functioning properly and 10/100 PS has detected the presence of the network. It does not mean the 10/100 PS has an IP address or is attached to a printer queue.

- If the LED is slowly flashing **red**, the 10/100 PS has not detected the presence of a network cable. To solve the problem:

  1. Turn the printer off (**O**).
  2. Remove the network cable from the 10/100 PS.
  3. Plug the network cable back in until you hear a click.
  4. Check the other end of the cable in the same manner.
  5. Turn the printer on (**I**). If the 10/100 PS still does not detect a cable, continue.

     Important • Cables with a rating higher than CAT-6 have **not** been tested.

  6. Verify that the network cable is appropriate for the network and has an RJ-45 connector.
  7. Connect the 10/100 PS to a network drop that is a known good network connection. If the 10/100 PS is still unable to detect the network cable, contact Technical Support for assistance.

- If the LED is slowly flashing **green** (1 time/sec), the 10/100 PS is trying to print a job. If the job does not print, check the following:

  1. Verify that the printer has media and ribbon (if in thermal transfer mode).
  2. If the printer is showing any errors, it is unlikely that the 10/100 PS can send data to the printer. The LED continues to blink until the printer malfunction is resolved or until the printer is turned off (**O**).

3. Flashing red indicates the Power On Self-Test (POST) is in progress.

- If an active network cable is connected and the LED is solid **red** for more than 30 seconds, the 10/100 PS has failed the POST. If the failure is not severe, the 10/100 PS attempts to print a configuration label on the printer. A failed POST may be a connection to a malfunctioning 10/100 PS device.

  1. Turn the printer off (**O**), wait 10 seconds, then turn the printer on (**I**).

  2. If the 10/100 PS still fails the POST, continue below.

  3. The 10/100 PS has a hardware problem that can be fixed only by replacing or returning the unit. Contact Repair for repair or replacement information.

- If the LED is alternately flashing **red** and **green** for longer than 2 minutes, the 10/100 PS is in firmware-download mode. This means it is waiting for new firmware data to be sent before it continues normal functioning. Perform the following:

  1. If the 10/100 PS was purposely put into firmware-download mode, finish the download with the proper update utility. Visit the Zebra Web site at http://www.zebra.com to download this utility.

  2. If the 10/100PS was not purposely put into firmware-download mode or if you wish to exit this mode, default the unit. Follow the instructions in *10/100 PS Status Indicator* on page 98.

  3. Contact Technical Support for additional help.

10/100 PS Network Status/Activity Indicator

A bi-color Status/Activity LED indicates network speed, established link, and network activity.

- If the LED is off, no link was established.
- If the LED is solid **green**, a 100BASE-T link is established.
- If the LED is flashing **green**, a 100BASE-T link is established and network activity has been detected.
- If the LED is solid **orange**, a 10BASE-T link is established.
- If the LED is flashing **orange**, a 10BASE-T link was established and network activity has been detected.

Network activity detected by this LED does not mean the activity is data for the print server. The activity is all activity on the network seen on the 10/100 PS.

ZebraNet Bridge Discovery or Configuration Problems

If you are having problems using ZebraNet Bridge to discover or configure the unit, check the following:

- Verify there is not a router between the workstation running ZebraNet Bridge and the 10/100 PS. Because the 10/100 PS does not have an IP address, TCP/IP communication cannot be started across a router. Run ZebraNet Bridge on the same subnet as the 10/100 PS.
- Verify the 10/100 PS has a solid green light. If the LED shows a rapidly flashing green light, check the network cable that is attached.

Unable to Print

If you are having problems printing, verify that there is communication between the 10/100 PS and the printer. Check the following:

- Print a configuration label by pressing the test button on the 10/100 PS. If a configuration label does not print, verify the printer has media and ribbon (if used) and is not paused.
- Ping the printer to determine the ability to communicate with the printer. See *Ping the Printer*.
- Or open a Telnet session and send a ZPL command to print a configuration label. See *Telnet* on page 101 for more information.
- Check obvious error conditions such as head open, out of media, out of ribbon, etc.
- If problems persist, contact Technical Support.

Ping the Printer

To ping the printer, complete these steps:

1. Open a DOS window.

   To open a DOS window, click on Start > Run.

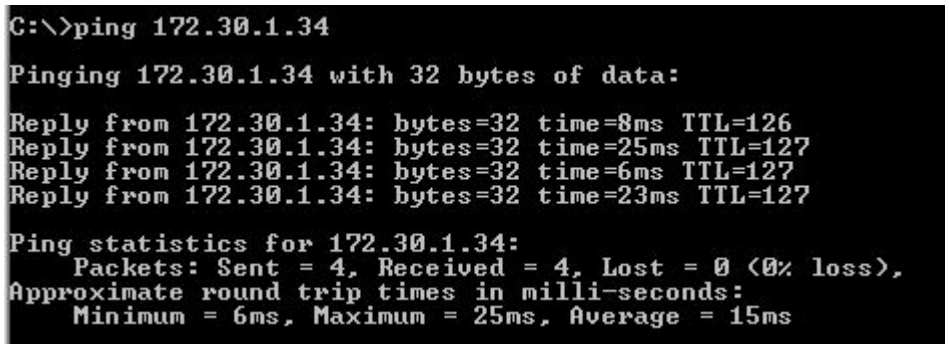
2. In the Open text box, type: `cmd`
3. From the DOS prompt, type:

   `ping xxx.xxx.xxx.xxx`

   where `xxx.xxx.xxx.xxx` is the IP address of the print server

4. See Figure 36. You see a reply from the print server indicating a connection.

Figure 36 • Example of a Successful Ping



If the issue is a communication problem, you would have received an error message.

Telnet

Open a telnet session to send a ZPL command from a DOS prompt.

Note • You do not need to open a telnet session if you pinged the printer using the previous procedure. The purpose of these two procedures is to identify whether your PC can communicate with your printer.

To print a configuration label by sending a ZPL II command, complete these steps:

1. Open a DOS window.

   To open a DOS window, click on Start > Run.

2. In the Open text box, type: `cmd`

3. From the DOS prompt, type:

   `telnet xxx.xxx.xxx.xxx 9100`

   where `xxx.xxx.xxx.xxx` is the IP address of the print server.

   This will connect your PC to the 10/100 PS through the parallel port of the printer.

4. Enter `~WC`.

   This ZPL command will print a configuration label on your printer.

5. Click the **X** in the upper right-hand corner of the window to exit.

If the configuration label prints, the issue is not a communication problem between the printer, the print server, or the PC.

Unable to Configure Device

To assign an IP address to a ZebraNet 10/100 PS using ZebraNet Bridge, you must be on the same subnet. If ZebraNet Bridge has Multicast enabled, you may be able to view the ZebraNet 10/100 PS on another subnet, but you will not be able to configure the device.

HP JetAdmin or HP Web JetAdmin

The ZebraNet 10/100 PS may be set up and managed using HP JetAdmin or HP Web JetAdmin products.

E

Frequently Asked Questions

This section provides a group of frequently asked questions (FAQs) about 10/100 PS.

FAQs

Can the internal ZebraNet 10/100 PS option work on a computer network that is running both TCP/IP and IPX protocols simultaneously? Yes. The ZebraNet 10/100 PS runs all of its available protocols simultaneously. This means that the ZebraNet 10/100 PS can run on mixed networks such as a network using Microsoft, and UNIX.

Important • The ZebraNet 10/100 PS does not support IPX, but it can function on networks that use IPX protocols.

Will the ZebraNet 10/100 PS allow connectivity to anything other than a PC network? Yes. The ZebraNet 10/100 PS allows connectivity to systems such as IBM's AS400, provided that it is configured using TCP/IP. Other network protocols can be used with third-party adapters that are converted to 10BASE-T or 100BASE-T.

What if a print job makes it to the queue, but never leaves the queue? The label does not print. These are the things to check:

- Confirm that the printer is turned on and receiving power.
- Confirm that the network cable is plugged in and that you can ping the printer.
- If the above bullets do not change the outcome, it is likely that there was a misconfiguration while creating the queue. The queue must be recreated verifying the following:
  - Confirm that you use the print server's valid IP address.
  - If you are using a UNIX or AS/400 host, there is an option for the remote queue name. There is only one valid response to use: PORTLF1.
  - If Windows does not have LPR installed, the above required option should be left blank.
  - See the documentation for other operating system specific queue creation.

What are the minimum requirements to network a printer?

- Cat-5 network cable with 10BASE-T or 100BASE-T connectors
- 10/100 PS
- Hub or Switch
- If a hub or switch is NOT used, you need a cross-over cable.
- Workstation running a TCP stack with print services installed.

What is the default User ID and password for the print server?

- The User ID is **admin** and the password is **1234**.

What ports are open on 10/100 PS and related software?

TCP Ports:

- 21 FTP
- 23 Telnet
- 80 HTTP Server
- 515 Printer port
- 631 IPP port
- 9100 Raw socket connection

UDP Ports:

- 161 SNMP broadcast from 10/100 PS
- 162 SNMP trap on ZebraNet Alert
- 4201 discovery destination on 10/100 PS
- (dynamic) SNMP get request from ZebraNet Bridge
- (dynamic) discovery broadcast from ZebraNet Bridge
- (dynamic) discovery broadcast from ZebraNet Bridge

What are my network connectivity options based on when using a 10/100 PS?

It depends on your environment, but the print server accepts print jobs in any of the following ways:

- *FTP* — ZPL/EPL files can be sent to the printer via a FTP client as standard ASCII files.
- *HTTP* — (ZebraLink-enabled printers *only)* Using the script option of the print server's homepage, you can type ZPL into a specified location of the Web browser and send it to the printer.
- *IPP* — Using third-party IPP clients, print jobs can be sent via the Internet.
- *LPR/LPD* — Sometimes referred to as queue based printing. LPR/LPD is the standard in network printing. Most TCP/IP operating systems are compatible with this option.
- *Raw socket connection* — You can connect to the printer directly via the network, bypassing *everything in-between*. This option is commonly used to integrate ZPL/EPL into existing programs, such as VB scripts.
- *POP3* — With proper configuration, you can place ZPL/EPL files into the body of an email, and it will print. The print server periodically checks this email box at the specified intervals and prints the body of the message. **IMPORTANT:** Attachments and subject lines are not supported.

Notes •

Glossary

10BASE-T A type of Ethernet that uses unshielded twisted pair cable.

100BASE-T A type of Ethernet that can transmit 100Mb of data per second with a twisted-pair cable.

ARP The standard TCP/IP method for determining the actual network address of a device based on its IP address.

ASCII A standard for the binary representation of characters.

BOOTP BOOTP (Bootstrap Protocol) is a protocol that lets a network user be automatically configured (receive an IP address) and have an operating system booted (initiated) without user involvement. The BootP server automatically configures the following information: IP address, gateway, subnet, system name, name server, and more from a pool of pre-determined addresses for a certain duration of time. BootP is the basis for a more advanced network manager protocol, the DHCP (Dynamic Host Configuration Protocol).

broadcast In a network, a situation when all destinations on the network receive a given packet.

client A workstation or PC in a client/server environment.

community For SNMP, a relationship between an agent and a set of SNMP managers that defines security characteristics. The community concept is a local one, defined at the agent. Each community is given a unique community name.

current mode (parallel port) A mode that the printer and print server negotiate.

DHCP (Dynamic Host Configuration Protocol) DHCP is an alternative to another network IP management protocol, Bootstrap Protocol (BOOTP). Like BOOTP, DHCP can configure an IP address, gateway, subnet, system name, and name server. When speaking about the 10/100 PS, BOOTP, and DHCP configure the same options.

delete bytes This number is used to remove characters from the beginning of every job sent to the logical printer. The value for delete bytes can range from 0 to 255.

dynamic A dynamic configuration, as the name implies, means that it changes. BOOTP and DHCP offer time-based leases for the configurations they assign. Their changes depend on the time-based lease, and how often the printer itself is offline and online again. A dynamic configuration can include BOOTP or DHCP.

Ethernet A widely used local area network system based on the IEEE 802.3 standard.

firmware Software routines that are stored in ROM (Read Only Memory). This is typically part of a device, such as a printer or 10/100 PS.

FTP File Transfer Protocol, a TCP/IP-related protocol for transferring files between devices on a network.

Flash memory A type of memory that allows read-and-write operations, but permanently stores data when the power is turned off. Useful for storing firmware because it can be easily updated by downloading new code.

gateway A device that converts one higher-level network protocol to a different higher level protocol.

gleaning A temporary, local configuration option. Gleaning lets you add the address of the device you want to configure to your local workstation's ARP table. This configuration is not permanent and is valid only from the workstation from which you entered the ARP information. After the information is entered into the workstation's ARP table, the user follows up with a Telnet session to enter the information permanently. Note: When using ZebraNet Bridge, a wired PS with an address of 0.0.0.0 can only be discovered through a local broadcast.

IP Internet Protocol, one of the main protocols of the TCP/IP protocol suite.

IP address A network address used by the TCP/IP protocol.

IPP Internet Printing Protocol. Allows you to associate a printer with a URL address that is used for printing over the Internet.

IPX Internetwork Packet Exchange, one of the NetWare protocols.

JetAdmin A Hewlett-Packard printer management program available for NetWare and TCP/IP.

logical Refers to conceptual rather than physical. For example, a computer might have a single physical connection to the network (an Ethernet adapter card), but could have logical connections to several other devices on the network.

MAC Address Media Access Control. Ethernet address that corresponds to the assigned IP address.

name server A workstation on a TCP/IP network that provides a list of all workstations on the network.

node A device connected to a network, such as a computer or print server.

parallel port A port on a device that sends information in groups of bits over multiple wires, one wire for each bit in a group.

ping A TCP/IP command that determines whether a device is accessible on the network.

POP3 Post Office Protocol, the protocol used to retrieve email from the server.

port A physical connector, such as the parallel port, or a logical connection to a device.

post-string A string that is sent at the end of every job going to the logical printer. Maximum 64 characters long.

pre-string A string that is sent at the beginning of each job that goes to the logical printer. Max 64 characters long.

print server A device in a network that changes a network protocol into a printer protocol.

protocol A method of sending and receiving data between two or more workstations on a network, and ensuring that the data is received without errors.

RARP Reverse Arp, a standard TCP/IP method of determining a device's IP address based on its Ethernet address.

raw TCP port A type of TCP port in which data is passed unmodified to the receiving node.

RJ45 A type of modular jack connector similar to a telephone connector with up to eight wires. Used for 10BASE-T and 100BASE-T Ethernet connections and for serial port connections.

serial port On a printer or print server, a port that transfers data one bit at a time. Serial ports usually have either a 25-pin, 9-pin "D," or RJ-45 connector setting mode (parallel port).

A mode that the print server is set to for the highest level of parallel port communications.

server A device on a local area network that provides services to client computers on the network.

SMTP Simple Mail Transfer Protocol, a protocol used to send email messages over the Internet.

SNMP Simple Network Management Protocol, a protocol for monitoring and controlling devices on a network.

spooling In printing applications, spooling is the transfer of data to a temporary storage area on disk (the print queue) prior to printing. Spooling allows many jobs to be queued to a single printer.

static Refers to a static IP address. All information is provided by the network administrator.

subnet mask A TCP/IP method of dividing a network into several smaller subnetworks.

TCP/IP Transmission Control Protocol/Internet Protocol, the de facto standard for Internet communications that is widely used on local area networks.

TCP Port A method of accessing a TCP/IP service, where a device with a single IP address can have multiple TCP ports.

Telnet A TCP/IP protocol that allows two devices to communicate over a LAN.

trap An unsolicited message sent by an SNMP agent to an SNMP management station. It notifies the management station of some unusual event.

UNIX A general-purpose computer operating system used on many different kinds of computers.

ZebraNet 10/100 Print Server An Ethernet connectivity solution.

ZebraLink Allows you to connect and control your bar code printers anywhere and anytime.

ZPL II Zebra Programming Language II is a powerful label-definition and printer-control language.

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